THE FARMERS' CABINET,

AND

AMERICAN HERD-BOOK.

DEVOTED TO

AGRICULTURE, HORTICULTURE, AND RURAL AND DOMESTIC AFFAIRS.

Perfect Agriculture is the true foundation of all trade and industry.—Liebig.

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Effects of Railways upon Agriculture.

The following are extracts from the evidence of James Smith, Esq., of Deanston, given before the Select Committee of the House of Commons on Railway Acts Enactments—the minutes of the testimony adduced before which committee have just been issued, pursuant to an order of that House, dated the 25th of August last. The extracts in question relate to the effects of the facilities afforded by railway conveyance to agricultural improvement:—

Have you had occasion to consider the facilities afforded by railway conveyance to agricultural improvements?—Yes, I have.

Will you state generally what you consider has been the result?—I have observed upon those lines that have been in existence for some years, over which I have had occasion to travel, that a very great agricultural improvement of the lands in the neighbourhood has been the result, arising mainly from the cheapness and facility of transport; and I have drawn out some tables to illustrate that. I have one table taking a farm of 200 acres and a six-course shift; the committee are aware that there are different shifts of rotation, and that some lands suit best to be cultivated upon one, and some upon the other. I have taken this farm upon the six-course shift, which is most suitable for the bulk of the medium land of England and Scotland; I have supposed that farm to be in most full cultivation, thoroughly improved, and to be both arable and pasture. I have taken the quantities of green and dairy produce, and cattle, and everything which I can conceive will be exported from that farm, and it amounts to 148 tons. I have then taken the imports, consisting of store cattle to be fed, lime and other matters, such as guano, and the different chemical manures which are now being introduced; and also seed, because the shifting of seed in a good farm is always attended to: and I have supposed that this weight shall be transported upon an average fifteen miles, which I think is a very low estimate. The quantity imported will be 197 tons; making altogether, of imports and exports, 346 tons 14 cwt.

That is all for fifteen miles?—Yes. Then I have taken the expense of transport by railway at 1*d.* per ton per mile; on some railways it is considerably higher, and on some lower, but in the present advanced state of railways we may fairly assume that to be the general rate.

For the produce transported, and the manure brought to the land?—Yes; taking it

upon the average that I have taken, and also taking the number of persons that will travel to market, and in various ways, at 1*d.* per mile, the whole amount of charge of carriage for imports and exports is £40 8*s.* 9*d.* By the old mode of conveyance the expense would have been, assuming 6*d.* per ton per mile for the goods, which I find to be as low as you can carry it by the old mode, £142 16*s.* 3*d.*

That is for the same distance?—Yes.

On what principle do you assume 6*d.* to have been the charge by the ordinary roads? I speak from my own experience of thirty years. I have had a great deal to do with carting, both for agricultural produce and manufacturing produce, and I have found that I could never get it done under 6*d.* a ton in England; it costs rather more than that.

In giving an account of the produce of a farm, you deduct for home consumption?—Yes, I do.

Therefore, upon a farm such as you have stated, there would be a saving of £102 7*s.* *d*6.?—Yes. Then taking that at twenty years' purchase, it will give £2,047 10*s.*; if you take it at thirty years' purchase, it will amount to £3,071 5*s.*

Have you given the supposed rental of that farm?—No, I have not; the rental would be about £400.

This expense, then, would be in addition to the rent?—Yes.

And the same farm which without a railway would be only worth £400, would be worth £500 after a railway was established?—Yes; 10*s.* an acre more.

You have stated the advantages which a particular farm would have in being able to send its produce to market by railway, and bringing back manures; will you state what is the advantage in respect to stock in particular?—The advantage in respect to stock is very great indeed, both in bringing lean stock from the district in which it is reared to the richer district in which it is fed, and also for the transmission of the cattle, when fed, to the market for the consumer.

Are you able to show to what extent that works?—I have some statement here upon that subject: the rate hitherto charged by railways for the conveyance of stock is pretty nearly the same per mile as the expense of driving, and where the great saving occurs is in the condition of the animals, especially in fat stock; the loss from driving them being equal, in the case of fat bullocks on a drive of from 60 to 70 miles, to the whole expense of the transport; it is at least five per cent. upon the value of the bullock.

The advantage as regards the conveyance of the produce is an advantage of so much per ton?—Yes.

Was not the use of manures imported from abroad limited to certain distances from the ports?—Certainly; either from the ports or from canal communication.

The introduction of railways enables them to be sent to much greater distances at the same cost?—Decidedly.

In that way districts which were not able to profit by those manures are now able to do so?—They are.

In consequence of the introduction of railways, have not there been manufactories established in different parts of the country for the manufacture of sulphuric acid for the use of agriculture?—Yes; there has been a very extensive introduction of artificial chemical manures in consequence of the facility of transport, and I have no doubt that it will very greatly increase.

What manures do you principally allude to?—I allude to Liebig's chemical manures. I have not myself, in my experience, found any great efficacy in those manures, but there are other manures which have been found very efficacious; there are the urates, prepared from urine; there is bone-dust; there are rape-cake and nitrate of soda; and there are mixed manures, consisting of several ingredients chemically combined.

Is not the use of sulphuric acid for agricultural purposes considerably increasing?—I think it is: it is very much used for dissolving bones.

May not railroads be used to carry manures from towns to a much greater extent than was formerly the case?—Certainly.

And in that way the waste that now takes place will hereafter, it may be hoped, be prevented?—To a considerable extent.

Have you considered to what extent railways may be made useful for the purpose of mixing soils?—Yes, I have.

Will you state your opinion upon that subject?—The transport of earths for mixing soils, if the railroads could carry them to the immediate ground where they were to be applied, would be of very great advantage; but the difficulty of availing yourself of the benefit of railways for the transport of the soils is, that the soil must be refilled, in most cases, and carted to a considerable distance.

Railways would be useful only in cases where those earths could be easily obtained?—Exactly.

Take the transport of sea-sand?—Sea-sand in Ireland is carried thirty miles up the country in little carts, and is found to pay the farmer for the carriage when applied to clayey and mossy soils.

And therefore if the charge made for the conveyance of earths was very low, should you think that in that particular case the calcareous sand from the sea-shore might be carried profitably for considerable distances into the interior?—I think so; and in many instances where there are moors and waste land, it would be well worth the while of the proprietor, having a railway passing through that district, to construct a tram railway from the railway on to the moor or waste land.

Is not nitre also, and lime, in certain districts, used, which might be transported with advantage to great distances?—Yes.

You are aware of the improvements that have taken place in agriculture, by the introduction of those foreign chemical manures?—Yes.

Is not the utility of them as stimulants limited to a short period?—Bone-dust, which is brought very extensively from the continent of Europe to this country, is a very permanent manure. Guano is less permanent, but it has this advantage, that it enables the farmer to grow an extended breadth of green crop, for the feeding of cattle and sheep; and if the green crop is grazed, he is enabled to increase the produce of his farm.

But that requires to be renewed at short periods?—It requires to be renewed at shorter periods than bone-dust, but it has established extra stock manure upon the farm.

But altering the earths would be a permanent improvement of the soil?—It would; a great deal of mossy soil, if you lay on even half an inch, in some cases, of sand, or more especially alluvial soil, it will render that ground productive for many years.

It is necessary, in order that those manures may be made extensively useful, that the charges upon railroads should be very low?—It is.

You have given a calculation of the benefit to a farm on the supposition that the rate per ton shall be 1*d*. What would the advantages be, supposing the rates were to be reduced to one-half or one-quarter?—There can be no doubt that a low rate of charge would very greatly tend to the increased consumption of manures, and to the transport of earths for agricultural purposes; that would give a much increased produce to the land, which would enable the agriculturist to furnish his commodity at a lower rate; that again would increase the consumption in large towns; and in manufacturing populations it would also create a greater traffic upon the railways, and enable them still further to reduce their rates; and as the heavier articles are more consumed by the working classes, it would add very much to their comfort; and there are great tracts of country which would be cultivated to much advantage, if favoured with railway communication, which are now allowed to lie comparatively barren.

Looking, therefore, to those results, ought not railroads receiving high profits to be obliged to extend branches laterally to districts which want of communication has left in comparative unproductiveness?—I think so; it has occurred to me upon this point, that it would be a great advantage if, by some public authority, the country should be divided as regards railways, into sections, so that there might be systems of railways established for those different sections, according to their respective wants; a system so established would be enabled to provide branch railways into districts which could not of themselves afford to pay for a railway; they would be enabled to do that, because this branch, though it did not pay itself, would pay as part of a general system, in consequence of the additional traffic that it would bring upon the line.

Referring again to the benefit to agriculture from the introduction of railways, and consequently of cheap conveyance, can you give the committee any particulars of the advantage of the transport of the carcasses of animals, as compared with the old system?—Without a railroad it is impossible to transport fat cattle any greater distance than from 50 to 70 miles, without very great deterioration; but railroads will afford the means of transporting those cattle 300 or 400 miles with great advantage, and in carcasses they may be transported 700 miles; and in that way meat may be brought from the most distant parts to populous districts at a very small additional expense, which, with the expense for transporting either beef or mutton in the carcass, does not amount to more than one-third of a penny for five hundred miles, so that you may have meat nearly as cheap in London as you have it in Inverness. There is another great advantage arising from this easy and cheap mode of transit; which is, that the little country butchers, who purchase lots of cattle and sheep for the consumption of the town or village in which they may live, always find among those lots a few that are of too good a quality for the consumption of their particular district; and if they are enabled to send them to a great distance to a more wealthy part of the country, they not only supply those rich communities with the superior article that they want, but they can supply it at a cheaper rate; and again, this enables them to sell the medium and inferior

animal at a lower rate to the consumer in the country; so that both the rich population of towns are benefited, and the poor of the districts where the animals are killed are very much benefited.

Is there not a demand in large towns for picked joints?—There frequently is; and I know, from the inquiries I made in Yorkshire for the Direct Northern Railway, that the butchers are contemplating, when that railroad communication shall be worked out, to send the surplus of their better joints to the London market, which will enable them to sell the inferior parts to the working classes at a lower price.

In short, quick conveyances enables them to dispose of the whole animal in the best market?—Yes.

By the former mode of conveyance there was no possibility of carrying killed meat any great distance?—It was quite impossible. There is another great advantage in killing the animal in the country districts; the offal or inward parts of the animal are available to the working classes of the district, and there is an immense quantity available for manure, which when brought to those large towns is a nuisance, in the country it is of great value.

Have you anything to add in explanation upon the points upon which you have now been examined?—I have several tables to give in illustrating the different points upon which I have been examined. I have no doubt that railroads will do more for communicating intelligence amongst the general community than even the press has done, inasmuch as seeing a thing is much more than hearing of a thing, and there will be much greater progress made in the diffusion of improvement by railroads than by any other means.—*British Farmers' Magazine.*

Newbold's Plough—The Farmers' Club, N. Y., Fourth mo. 18th, 1848.

Mr. Meigs introduced to the Club Nathaniel Sands, an aged gentleman, who desired to speak of the first cast-iron plough and Charles Newbold, its inventor. Mr. Sands said that he and many other citizens, who are now seventy and eighty years of age, remembered Charles Newbold, a man of excellent character, who some fifty years ago became enthusiastically devoted to the project of an iron plough. He had contrived to cast the plough with such a form as then was unknown for excellence. He obtained a patent which was exhibited to the Club, dated June 26th, 1797; but he had invented it as far back as 1790. Newbold spent several years and an estate of about $20,000, in the attempt to introduce his cast-iron plough. Mr. Sands had never heard it doubted that Newbold was the first man who invented the cast-iron plough. Before his time, the hog plough was used—so called because of its very irregular movement in and out of the ground, like the rooting of a hog.

Newbold's plough was at first liable to break, and the blacksmiths were loath to mend it. The mould board and land slide were cast whole. Mr. Sands paid $10 a piece for two of Newbold's ploughs, and used them in Orange county, and then considered them to be the very best plough he had ever handled. Mr. Sands said that this cast-iron Newbold plough was the very basis of all the cast-iron ploughs since made; that it was an excellent model, and all the improvements since made were based upon it; that Wood's patent was for an improvement in the plan of attaching the share. Newbold at last added a steel edged share to his cast-iron mould board and land side. Thomas Jefferson tried Newbold's plough at Washington—approved of it and set himself to inventing a scientific mould board.

Mr. Meigs thought that, although the nation might object to the long continued monopolies of patents, yet that in every case of distinguished benefit conferred by any ingenious citizen upon his country, it was a duty, and one which would prove to be profitable to the nation, to mark that worthy citizen by a suitable present.

Mr. Wakeman moved that a committee of three be appointed to examine the claim of Mr. Newbold.

The Chairman appointed Charles Henry Hall, Judge Van Wyck, and Josiah Dutcher.

Dr. Underhill asked as to the model of Jethro Wood—how far it approached the Newbold plough?

Mr. Sands—After many trials, Mr. Wood had to return nearly to Newbold's model.

Dr. Underhill—It seems to me that something ought to be done for the widow and daughter of the unfortunate, but ingenious Newbold. Certain it is, that there has never been produced in the world so important an instrument as the plough of iron. The saving of labour and the amount of produce from the iron plough, are beyond all calculation in dollars, for the last thirty years.—*Farmer and Mechanic.*

The Southern Planter gives the following simple remedy for destroying lice upon cabbages:

"Cover the leaves infested with the lice with a handful of dry earth."

The Extended Field Cultivation of Vegetables.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

It is certain that within the present century the farmer has very materially increased the list of his cultivated crops; and that this variety in his rotations will be yet more extended, there is, I think, little reason to doubt. This extension, too, will perhaps not be entirely confined to the cultivation of green crops raised for the consumption of live stock, or of the cereal grasses, but may, in favourable situations, include with advantage, the more valuable varieties of fruit and vegetables.

We are all aware to what a profitable extent, in particular districts, such cultivation has long since extended. The immense and valuable apple and pear orchards of Herefordshire and Devonshire, the cherry orchards of Kent, the plums of the latter county and of Surrey, are well known instances of the profitable and extensive cultivation of common fruit. And to a considerable, although a minor extent, is the cultivation of even the pine-apple carried on in the south of Sussex and other places. Of culinary vegetables, the cultivation of the superior varieties has not only arrived at a very large amount, but I cannot but feel that this might be still more advantageously extended in many localities by the farmer. Few persons, in fact, are aware of the extent to which the demand for many vegetables extends. Take, for instance, the asparagus: "This," remarks Mr. George Johnson, "is especially cultivated extensively for the London market; and it is estimated that in the Surrey parish of Mortlake alone, there are generally about 80 acres under this crop. One grower there (Mr. Biggs) has sometimes had 40 acres under asparagus at one time. A great deal is also grown near Deptford: one grower there (Mr. Edmonds) has had 80 acres entirely under this crop—a statement which must appear almost incredible to those who have not witnessed the loads of this article daily heaped on the green stalls of the metropolis for the space of nearly three months." This root delights in those soils which contain common salt. It is, in fact, a marine plant, and is found wild on our coasts about Harwich, Weymouth, &c., and always grows with increased luxuriance in our gardens, in soils dressed with salt. These facts explain the subsequent observations of the author of the Monthly Volume, when he remarks: "In a garden formed at Dunbar, in the very beginning of the 18th century, by Provost Fall—a name well known in the mercantile world—asparagus was for many years cultivated with uncommon success. The variety used was the red-topped, brought from Holland. The soil of the garden is little better than sea-sand. This was trenched two feet deep, and a thick layer of sea-weed was put in the bottom of the trench, well pressed together and beaten down. This was the only manure used, either at the first planting, or at subsequent dressings. There was, in this instance, an inexhaustible supply of the article generally at hand, as the back door of the garden opened to the sea-shore."

I think it not improbable, that in many of the warm valleys of the south of England, in sites where the beds could be occasionally irrigated, and the crop not annually cut so close as at present, this root might be cultivated to a much larger and more profitable extent than at present. Of the irrigation of this crop, Mr. G. Johnson remarks: "The cultivation of this vegetable is introduced by our countrymen even into the hottest latitudes of the tropics. Mr. J. Newman has published the successful mode he has adopted for obtaining it good, in the island of Mauritius, and we have eaten of it—excellent in quality, and nearly of an average size in Bengal. Daily irrigation is there the chief essential."

In the county of Kent, there are also, as Mr. Main remarks, extensive and profitable fields of filbert trees; and there the farm labourers are adepts at the proper method of rearing and pruning the trees. These plantations, in fact, extend to an extent of several hundred acres, and I have little doubt but that their cultivation might be very profitably extended in other portions of the kingdom with equal success. We find also that in many districts the cultivation of certain fragrant plants is carried to a remarkable extent. Thus, in the county of Surrey are found many considerable fields devoted to the growth of lavender, peppermint, &c. The parish of Mitcham has a good many of such plantations; and it is remarkable, in the case of some of these, such as lavender for instance, that a very poor and light gravelly soil is best suited to this plant; being, when grown on such lands, more fragrant, longer lived, and more capable of enduring severe weather, than in a rich soil. In rich or moist soils, it grows, it is true, luxuriantly; but then it is commonly destroyed in the winter. As this plant delights in a dry, open situation, the cultivation of it on many soils might surely be extended; for there is always a considerable demand, not only for the green lavender flowers, but for the high priced oil extracted from it by a very easy distillatory process.

It is hardly necessary to enlarge this list of readily produced vegetables, fruits and flowers, whose cultivation might, in so many favourable districts, add to the farmer's profits. There is hardly a locality in which one or other of the class of those to which I have alluded may not be occasionally introduced with advantage; and in the consideration of such partial variations in the ordinary crops of the farm, the young agriculturist will not forget that such modes of cultivation, by lengthening the usual rotation in any degree, is accompanied with considerable indirect advantages. The land becomes more productive by such changes; and in the case of some of them, they certainly prevent the increase, if they do not destroy some of the destructive insects which prey upon the ordinary crops of the cultivator. Thus, white mustard, woad, peas, beans, &c., are secure from the attack of the wire-worm, perhaps the most powerful and the most tenacious of life of all the insect enemies which the ordinary crops of the farmer have to encounter. The Lincolnshire farmers find that a broken-up pasture sown with woad, is quite free from the wire-worm during the following crop of wheat. And when speaking of a similar result after a crop of white mustard, Mr. Tallent remarks: "This fact I have demonstrated perfectly to my own conviction. I first tried the experiment on half an acre of fallow field, of 50 acres, which was much subject to wire-worm. The whole field was fallowed and sown with wheat; the half acre, which was previously cropped with mustard, was wholly exempt from the wire-worm—the remainder of the field was much injured. Encouraged by these results, I sowed the next year, a whole field of 42 acres, which had never repaid me for nineteen years, in consequence of nearly every crop being destroyed by the wire-worm. I am warranted in saying that not a single wire-worm could be found the following year. I am therefore (he concludes) under a strong persuasion that the wire-worm may be successfully repelled and eradicated, by carefully destroying all weeds and roots, and drilling white mustard seed, and keeping the ground clear fly hoeing." The mustard is not only excellent to plough in as a preparation for a wheat crop, in the way alluded to by Mr. Jesty, but as green food for sheep, as described by Mr. T. C. Burroughes, of Gazely. The increased number, or the extended rotation of the farmer's remunerative crops, then, even in but a minor and only locally applicable degree, is an object too important and too self-evidently so, to need any illustration. For such enlarged rotations not only add to the bulk of his corn, and improves both the quantity and the quality of the flour which it produces, but it renders it less liable to disease, or to the attacks of the insect vermin, which are in too many instances the agriculturist's greatest pest.—*British Farmers' Magazine.*

Wool Trade of the United States.

This article promises, at no distant date, to become of first-rate importance. The present growth is much greater than we in this country have, generally, an idea of, being upwards of sixty millions of pounds weight at the lowest estimate, far exceeding their domestic requirements. It is important to notice the great weight of the fleece, which is nearly double that of any other country producing similar qualities; and when we consider the facilities for extending the production, there cannot be a doubt that, in a short time, the quantity available for export will be very considerable. Moreover, it appears that of late much attention has been directed to the subject in the Western States, with this view, as offering, to some extent, a more profitable return than the cultivation of cotton; and when it is stated that one pound of wool, nearly full blood, can be grown at the same cost as two pounds of cotton worth 6d., there is every reason to expect that the trade will eventually prove remunerating. The receipts last year were below the previous one, the consequence of former shipments generally not having been attended with advantage; but this is accounted for, to some extent, by the indirect channels through which many of the lots came, and their inferior condition in most cases. Until they are got up with more care, better washed, and more evenly graded, we see little prospect of a profitable result. The greater part hitherto received has been so deficient in these essential requisites that purchases have been attended with extreme hazard to the buyer, which has operated much against their sale.—*British Farmer's Magazine.*

Fine Hogs.—Burlington county, in New Jersey, has long been famous for its pork: and the poor-house there has of late years, been very successful in slaughtering large hogs. The *Enquirer* of this city remarks: "The Burlington county poor-house—said to be altogether the best managed county establishment in the State—has produced this season, amongst other things, 63 hogs, weighing 26,750 lbs. The heaviest weighed 556; the smallest 327. Two yearling hogs weighed over 400 each. The average weight was 424¾ lbs."

The Murrain among Cattle.

At the monthly meeting of the Highland and Agricultural Society of Scotland, held at Edinburg, on 12th of January last, the Secretary read a communication from the Board of Trade, to the effect that the epizootie, which was thought to be disappearing, had broken out with greater violence than ever among the horned cattle of Wallachia, and that three-fourths of those which had been spared from last year's visitation were falling victims to it. The Secretary said, that though the communication just read had reference to the state of the epidemic in a distant country, the directors conceived it to be their duty to submit to the public all information conveyed to them on so important a subject, in regard to which Professor Dick, who was present, had promised to give to the meeting the results of his experience. Professor Dick then rose and made the following statement, which we give as of great interest to the public at present:

Professor Dick stated that pleuro-pneumonia was still prevailing with great violence, and varied with the weather. It existed at present to a great extent in East Lothian, as well as in Aberdeenshire, and throughout the North. He was informed yesterday, by one of his pupils, who is in practice at Maybole, in Ayrshire, that there has only been occasionally a solitary case for fifteen miles round during the last twelve months. He considered its origin and propagation to be atmospherical, and attributable to influences to which man and the lower animals were equally exposed; in illustration of which the Professor referred to the existing epidemic in the form of influenza, under which he himself was evidently labouring, and in consequence of which the public schools have been partially closed. The disease consisted of active inflammation of the lungs, and in the pleura which covers them and lines the chest. It was attended with great danger, particularly when the pleura was principally affected; and such cases generally were fatal, unless the proper remedy was immediately applied; because, when that membrane is attacked by inflammation, being what is called a serious membrane, it very rapidly proceeds to pour out serum and lymph between the lungs and ribs; the chest fills with water, and the animal sinks and dies rapidly. Man, and all the domesticated animals, are liable to disease, although they may not be equally affected at the same time. Horses, as well as dogs, during the present epizootic, have been less affected than cattle.

The disease is not, generally speaking, so fatal in horses as in cattle, because horses, being under continual notice, were better attended to; the symptoms were at once noticed, and they were seldom lost. The same would be the case with cattle, if properly looked after; but too little attention is paid by the breeders and rearers of cattle to the health and comfort of their stocks and the symptoms of their diseases; they, at the same time, are not so much under the immediate observation of their owners. Indeed, the early symptoms very readily escape notice, because they are obscure.

To illustrate the treatment required, the Professor referred to a case in Lanarkshire, where he had been called on for advice; his instructions to the smith or farrier on the property were, that he should bleed whenever he observed any cough or alteration in the milk or feeding; clean out the bowels by laxative medicine, say one pound of epsom salts, nitre, tartarate of antimony in large and repeated doses; repetition of bleeding: blistering the sides, and even firing, if necessary. After the inflammatory action has been subdued, tonics should be administered. By following this course, the smith has acquired a local celebrity. It was sufficiently simple, if adopted at an early stage of the disease; but if the disease has made a certain progress, no reasonable hope of success can be entertained.—*London Farmers' Magazine.*

Preservation of Food.

The preservation of food has at most periods been an object; but the usual processes of man have been, for the most part, little in advance of the squirrels and other animals; less than those of the bees, which have an instinctive perception of the true principle, viz., the exclusion of air, which they accomplish by hermetically sealing up their honey cells. In some cases this principle is aimed at, but in a clumsy way. Preserved provisions, as meat, fish, soup, and milk, are enclosed in hermetically sealed tin cases, and rendered durable for years. The air in these cases is excluded by the agency of heat and a partial cooking. The expense of these methods prevents their being more than a luxury. Potted meats are prepared with antiseptics, and the air is excluded by a covering of melted fat. Green fruits and vegetables are enclosed in sealed bottles, from which the air has been driven out partially by heat. Meats, antiseptically treated, are also preserved from the air by enclosing in a bladder or gut, in the form of sausages. Salted meat in brine is preserved

partly antiseptically by the salt, and partly by immersion in the liquid brine. Smoked meats are preserved, partly antiseptically by the empyreumatic acid, and partly by the watery particles being driven off by heat, so that the meat becomes a kind of glue, and the air is excluded. Dry cakes of glue may be preserved any length of time; but if they be moistened to admit the air, they soon putrify. The charqui or jerked beef of Southern America is made into a glue by the heat of the sun, and thus assumes the character of cheese; decomposing by mites in the same manner. Dried flesh of this kind, mixed with butter or fat, is the pemican of North Western America, from which air is thus excluded. Egyptian mummies have the air excluded by bandages. There are various modes in which grain is preserved, some intentional, some accidental. What are called brewers' grains or spent malt, the cowkeepers in the neighbourhood of London seek to preserve by covering them over in pits. The air is not excluded, and therefore the method is inefficient. What is called mummy wheat, has been preserved by the effectual exclusion of the air. In Spain, wheat is preserved in what is called Silos, *i. e.*, underground pits of peculiar soil, covered in with earth. Wheat thus treated lasts many years. The French armies were accustomed to hunt for these deposits for subsistence. A flat stone usually covered the opening; and on its removal a quantity of deleterious gas generally rushed out, sometimes killing the opener with asphyxia. In Canada West, hunters and Indians make deposits of corn and other things in artificial caverns called Caches, chosen in dry spots, and covered over. In some of the internal parts of Spanish America, the common granary is the skin of an ox taken off entire, and the legs and neck being tied round it, is filled with tightly-rammed earth through a hole in the back, while suspended between posts. When dried to a state of parchment, the earth is taken out, and the bloated bag, resembling a huge hippopotamus, is filled with grain, which is thus kept air and vermin proof.

Three conditions are essential to the process of putrefaction; viz.: heat, moisture, and still air. With wind, moisture is carried off; with cold, the decomposing process is checked, as may be seen by the carcases of animals that lie through the winter in snowy mountains, and dry up to glue. Without air, everything is locked up and remains *in statu quo;* as reptiles have been buried for ages in blocks of stone or ancient trees, and then resumed their vital functions, unchanged by time.

In direct opposition to these principles are the granaries of Great Britain and other countries constructed. Their site is generally the bank of a river, or the sea-side. They are built of many floors at a vast expense. They are provided with many windows, each floor being the height of a man, yet not permitting more than twelve to fifteen inches depth of grain on each floor, for fear of heating, unless in the case of very old samples. Men are continually employed to turn the grain over, to ventilate it, and clear out the vermin; and the weevil is naturalized in every crevice, as surely as bugs in neglected London beds, or cockroaches in West Indian sugar ships. It is the admission of air that permits this evil, that promotes germination, that permits the existence of rats and mice. *In the exclusion of air is to be found the remedy.* The practicalization of this is neither difficult nor costly: on the contrary, close granaries might be constructed at far less proportional cost than the existing kind. They might be made under ground as well as above ground, in many cases better. They might be constructed of cast iron, like gasometer tanks; or of brick and cement; or of brick and asphalte, like underground water-tanks. It is only required that they should be air-tight, and consequently water-tight. A single man-hole at the top, similar to a steam boiler, is all the opening required, with an air-tight cover. The air-pump has long ceased to be a philosophic toy, and has taken its place in the arts as a manufacturer's tool; and no difficulty would exist as to that portion of the mechanism. Now, if we suppose a large cast-iron or brick cylinder sunk in the earth, the bottom being conical, and the top domed over; an air-pump adjusted for exhausting the air, and an Archimedean screw pump to discharge the grain, we have the whole apparatus complete. If we provide for *wet* grain, a water-pump may be added, as to a leaky ship. Suppose, now, a cargo of grain, partly germinating, and containing rats, mice, and weevils, to be shot into this reservoir, the cover put on and luted, and the air-pump at work, the germination would instantly cease, and the animal functions would be suspended. If it be objected that they would revive with the admission of the air, we answer, that the air need not be admitted, save to empty the reservoir. If it be contended that the reservoir may be leaky, we answer so may a ship; and if so, the air-pump must be set to work just as is the case with a water-pump in a leaky ship.

The cost of an underground reservoir would possibly be more than one above

ground, but it has the advantage of occupying space of otherwise little value. One obvious cheapness of this improved granary over those now existing is, that the whole cubic contents may be filled, whereas, in the existing mode, not above one-fourth of the cubic contents can be rendered available. But many existing structures might be rendered eligible. For example: the railway arches of the Eastern counties, the Blackwell, and the Greenwich. In such cases the grain would be discharged into them from wagons on the line, in the mode used with coals. Reservoirs might be erected in farm yards, and the grain threshed out and carried from the harvest field direct, with the absolute certainty of preserving it any length of time that might be desired. Or, inasmuch as it is a certain thing that all farms must ultimately communicate with railways, by means of cheap horse-trains, or steam-sidings, in order to work to profit, it would be desirable that the granary should be erected at some central railway station, where a steam mill would do the work of exhausting the air, discharging the grain by an Archimedean screw when required, and grinding it into meal.

The same arrangements that are good on land are also good at sea. Many cargoes of wheat have been abandoned owing to heat and germination on their passage. Rats, mice, and weevils, also, are very destructive. If the vessels were built of metal-lined, air-tight compartments, the air might be exhausted by the pump; occasionally trying the pump to ensure against leaking; and thus even now, undried grain might be carried and delivered across the sea undamaged; the vessel would be more safe by means of air-tight compartments, and also more buoyant. And the same arrangements would be equally available for various kinds of goods subject to damage in transit,—such as are hermetically sealed in tin cases; and thus the expense of packing would be saved.

In reservoirs on shore the air might not merely be pumped *out;* warm air might be pumped *in*, to dry damp grain. Water might also be pumped in and out to *cleanse* the grain.

Similar reservoirs or magazines on a smaller scale might be constructed for butchers, or other provision dealers, and meat might be preserved fresh for weeks in the heat of summer, preventing the necessity of waste, or of selling at ruinously low prices; and so with fish brought to Billingsgate or other markets. On the same principle, there is no doubt that fresh meat, as sea stock, might be carried instead of salt meat, and that fresh provisions might be transported from any part of the world to any other part. Pork, or beef, or mutton, or venison, might be killed in America, and transported into England. Weevily biscuit would be a traditional commodity only in the annals of sailor craft.

"Water-tight compartments" is at present the expression for a safe ship. "Air-tight compartments" would be a term expressive of equal safety and far more general utility. The expense of air-tight joints for the manholes or openings would be but trifling. By the application of *gutta percha*, a perfect fit might at all times be ensured with scarcely any expense.

There can be little doubt, that with such arrangements, the prices of food would be far less fluctuating, and that it would become a practicable thing to borrow money on food as on brandy or iron, or any other commodity, when once its durability and unchangeability were demonstrated.— ***Westminster Review.***

From Hovey's Magazine.

On the Cultivation of the Mushroom.

By J. Kennedy, Gardener to S. T. Jones, Esq., Staten Island, N. Y.

Sir,—I have more than once been surprised, that, amongst the many valuable articles which appear monthly in the pages of your magazine, on the various branches of Floriculture and Horticulture, nothing, so far as I have seen, has been said on the cultivation of the mushroom; and, as it is an old acquaintance of mine, and one which I consider deserving a prominent place in the vegetable department, especially during the winter months, I shall take the liberty of throwing out a few hints on its culture, which may not be unacceptable to at least some of your readers. My mode of culture differs in some minor points from that in general practice, but as it possesses the advantages of being both cheap and simple, I hope it may lead to a more extensive culture of this delicious vegetable.

Early in the month of November last, I erected a shelf eighteen feet long by four wide, and one foot six inches deep, in a basement, underneath a row of lean-to buildings, on the north side of a vinery wall. The bottom of the shelf is elevated eighteen inches from the floor, and, in forming it, I left a cavity of one inch between each board, for the purpose of drainage, as well as to allow the heat from fermenting materials, placed underneath, to pass freely up into the bed: the shelf being completed, my bed was formed as follows: I first shook a light layer of litter from the barn-yard, over the bottom;

then four inches of horse-droppings free from the litter, and previously exposed in a dry airy place, in order that very little moisture may be in it at the time of using for forming the bed. I then put over this two inches of sandy loam, which I beat down firmly; and again put on four inches of horse-droppings and two of loam, which I also beat down; then four inches more of the horse-droppings, and two of loam, which, when thoroughly beat down, completes my bed.

Thus far completed, my next object was, to fill the vacancy underneath the shelf, with a mixture of hot stable manure, and leaves well moistened previous to their being put in, and, in the course of a week, I had a pretty lively heat in my bed; I think this was about the 18th of November. I then went to New York to procure the spawn, but, on making inquiries at the various seed stores, I found, to my regret, there was none to be had at the time. On my way home, however, I learned that a gentleman's gardener on the island had a mushroom bed the previous spring, where, on applying, I found the bed had been turned out some time previous; however, I obtained the liberty to examine the heap, and succeeded in finding sufficient to give me a start; this I put into my bed, and as soon as it began to work, I lost no chance of separating it, and distributing it as equally as possible over the bed. By using this precaution, and a judicious attention to my watering-pot, I soon had the satisfaction of seeing the prospect of a rich harvest; and, indeed, I was not disappointed; for the produce, I must confess, has rather out-weighed my expectations. The first mushroom I gathered, was on the 22nd of December, since which time, I have gathered, on an average, one peck per week. The bed is still improving, and I have no doubt but I shall be able to give a better supply for at least three months longer from the same bed, when I shall more than likely give it a month's rest, and then start it ahead again, when I shall furnish you with the results of my second progress.

It now remains to detail the mode of treatment since the bed was spawned, and, as the judicious applications of water are of the highest importance in the successful cultivation of the mushroom, I shall give the mode pursued by myself during the past winter, which I suppose will apply best for the system described above. I gave no water till the spawn began to run, which I was able to ascertain by thrusting my hand into the bed in various places, and when what I brought up had the appearance of net-work, and smelled like mushrooms, I gave the bed a liberal watering, which I repeated the two following days. I was then sure that I had given sufficient to moisten all the materials in the bed. This set the spawn actively to work, and I have only given a light sprinkling once a week since, which has kept the bed in a medium state, neither wet nor dry; but of the two I prefer the latter, as it is much easier at any time to wet the materials than to dry them; and too much water, in any stage of their growth, is certain destruction. With regard to temperature, I have seldom had it below 50°, and never above 60°, and between these two points, I am convinced, from a long course of experience, that mushrooms can be produced in the very highest state of perfection.

In gathering mushrooms, I always cut them; some twist them off, but I am not much in favour of this plan, as they are sure to disturb the young ones, which are always clustering and forming about the roots of those ready for gathering. I have often met with mushrooms formed and matured under the surface of the bed; but as they push up little hillocks, they are easily distinguished, and should be uncovered carefully, that the surrounding spawn may not be disturbed. It may be prudent to mention, that, when the weather was very cold, I covered the bed with litter to the depth of three or four inches.

I may also mention, as an additional encouragement to those who may be desirous of giving the above a trial, that they can force sea kale and rhubarb to a high state of perfection in the same cellar, and without any additional means: I have been supplying Mr. Jones's family with these vegetables from the same basement, since February.

Staten Island, March 29th, 1848.

Natural uses of Hair.

That hair effects an important purpose in the animal economy, we have evidence in its almost universal distribution among the mammiferous class of animals; and if we admit the analogy between the feather and the hair among all warm-blooded animals, additional evidence is obtained in the perfection of its structure, and again in its early appearance in the progress of development of the young. As a bad conductor of heat, it tends to preserve the warmth of the body; and in man it would have that effect upon the head, and serve to equalize the temperature of the brain. It is also a medium of defence against external irritants, as the heat of the sun's rays and the bites of insects, and against injuries inflicted with violence. Of special purposes fulfilled by the hairs, we have instances in the eyebrows and eyelids,

which are beautifully adapted for the defence of the organs of vision; in the small hairs which grow in the apertures of the nostrils, and serve as guardians to the delicate membrane of the nose; and in similar hairs in the ear-tubes, which defend those cavities from the intrusion of insects.—*Wilson on the Skin.*

Value of Sewer Water.

If we take the population of Liverpool at 300,000, their annual produce of sewer water would, according to Mr. Smith's (of Deanston,) data, be 7,140,485,676 gallons; and *if use could be found for all of it*, at the yearly rate of 17,920 gallons per acre, it would fertilise 398,460 acres. So that, allowing about one-half of the saving to go to the farmer, there would still, on Mr. Smith's data, be a revenue of above £270,000 a year to the town. And be it remembered that this estimate rests on the assumption of the *present sewer water* being used, without taking into account the improved drainage, by which the *whole soil* of the town—that to a very great extent is now otherwise disposed of—will be suspended in the water of the sewers, and increase vastly its value as a fertilizing agent.

By an experiment made lately in Lancashire, it was proved that eight tons of sewer water were superior in efficacy to fifteen of farm-yard manure, or three cwt. of guano.

We need hardly say, that if even a small part of this be true, the authorities of Liverpool may have at their command, whenever they choose, a fund amply sufficient to defray every necessary expense in improving the sanatory condition of the town. The Rev. Mr. Clay, in his report on Preston, has given a calculation in which he shows that, to place that town in as perfect a sanatory condition as external means well could, a sum of money would be required, the *annual interest* of which, to be raised by a rate, would be £8,959 9*s.* 8*d.* For this sum the whole town would be cleansed, every room in it ventilated, every house would have a water-closet and drain, the needful main and secondary sewers would be laid down, and half of the town supplied with water. To meet this expenditure, he estimates the annual value of sewer manure at £25,000, and the whole annual saving from improved sanatory condition, a lower rate of insurance, &c., at £22,815 more. In other words, the whole *weekly* expenditure per head of the population, for every improvement, would be about *three farthings*, while the whole weekly saving per head would be 4½d. This may be thought somewhat extravagant by those who have not paid attention to the subject; but let us see what the Towns' Improvement Company actually offers to do, and what it is about to do for Leicester, and, not improbably, for Manchester also. The proposal for Manchester is—to lay on pipes to every cottage, with a constant available supply of water to the extent of 100 gallons per diem to each house, for a penny a week for houses under £5 rent. To provide every cottage of the same class with a sink, washhand-basin, and self-acting water-closet, for another penny a week; and for an additional halfpenny a week, to keep the foot pavement and roadway clean by the sweeping-machine and washing with the jet. And lastly, "to effect street sewerage and pavement on terms of contract, and to seek its profit from an undeveloped source of revenue—the application of the refuse of the town for the purposes of agriculture." The company expects an income of twelve per cent. on the outlay from these sources, but offers to pay over one-half of all dividends above eight per cent. to the Town Council as an improvement fund. The Towns' Improvement Company has in connexion with it many individuals who are the most competent to form a judgment on the subject; and their proposals show the commercial value attached to sewer water as a source of revenue. Captain Vetch, R. E., one of their engineers, says in his evidence: "If the three objects of supplying water to the town, extinguishing fires, and of sewering and draining, were skilfully combined into one system, and if each town secured the benefits of such a combination to the inhabitants at large, their comforts and conveniences might be met either very cheaply, or even *be entirely defrayed* by a proper application of the manure."

The objection to the use of sewer water for agriculture, on the ground of malaria, is very simply answered by the fact stated by competent parties, that, while a top-dressing of stable dung gives off gases for six days, a dressing with sewer-water ceases to do so in *one day.—Liverpool Health of Towns' Advocate.*

Machine for Cutting Soles.—The Boston Rambler says: "Mr. C. D. Bigelow, of Marlboro, Mass., has invented a machine for cutting out soles for boots and shoes of every size and shape. The soles are cut out with the holes for pegs all punched, so that the peg awl will be entirely dispensed with, if some arrangement can be made to punch the inner sole. This will be a machine of great benefit to boot and shoe manufacturers, and we believe it can be got up at but little expense, as it is very simple.

Butter for Exportation.

The following are extracts from letters from Clonel and Cork, furnished by Brown, Shipley & Co. of of Liverpool, to B. P. Johnson, Secretary of N. Y. State Agricultural Society. To those who furnish our tub butter for winter use, every hint for its proper manufacture, is important. A great proportion of it brought to Philadelphia is really not such as this market should be supplied with. Our pound butter—we mean that which is brought by our market people from day to day,—is perhaps unsurpassed in its general character, by that which is found in any market in this country—but our winter, firkin butter needs improving.—Ed.

Letter received from Clonmel, dated 1st of July, 1847: "We are this morning in receipt of your favour of 29th ult., and in reply we will give you all the information we can, as to how butter is manufactured in this neighbourhood. Our best makers have large airy, cool dairies, and churn twice or three times a week, which depends on the heat of the weather. Caution must be used not to allow the cream to be too long in the tubs and pans, or until it gets sour, as the butter will then be inferior and what is termed *cheesy*. The butter-milk must be well washed out of the butter, and when salted to be packed *firm* into the firkin. These, with great cleanliness, are the principal things to be looked after in the manufacture, otherwise your butter will not keep its quality. The quantity of fine salt is 3 lbs. to the firkin, containing about 65 lbs. The butter in this district is made expressly for the London and north of England markets; in the former, at certain periods of the year it takes precedence of the Dutch. We never heard of *Rose butter*, but we know one of the Waterford houses brands the best quality he ships with a rose. The navy are supplied with butter exclusively from Cork, where a larger quantity of salt is used in the manufacture, and where it is made up expressly for foreign exportation."

Extract from a letter from Cork: "In reply to the query as to the best mode of preparing butter for hot climates, we believe more depends on the climate the cow is feeding in, than in the preparation; as we find that the Cork butter, which is drawn from the counties of Cork, Limerick and Kerry chiefly, has maintained a character in all foreign markets, when the trade for such has failed in all other Irish ports where it was attempted. The butter brought here is packed by the farmer in original packages, which should be good casks of about 66 to 70 lbs. nett each, capable of containing pickle; the pickling and cooperage—with some one or two lbs. of the salt on each package additional, to keep the pickle at full strength,—should be done at port of exportation, as it is here. The quantity of salt mixed in the making of the butter to be about one lb. of salt to 10 or 11 lbs. of butter, and the buttermilk to be well worked out of the butter, without using, however, the hand too much. In packing, care should be taken to pack it as closely as possible. This, we believe, is the only instruction that can be given. The term 'rose butter,' we know not the derivation of. There is only one description shipped here, and all is brought in for inspection to a public market in this city."

Gypsum, or Plaster of Paris.

To Chancellor Livingston is owing the introduction into New York, and the common use of *gypsum* or plaster of Paris, as a manure. About the year 1789, he began to make experiments on his own farm, and succeeding, he communicated his results to the farmers of the State. And in a few years he had the satisfaction of seeing it generally used. It is this chiefly which has given New York its present primary station among the United States. The lands upon our Hudson river were fast deteriorating, having been worn out by constant tillage. On this account, the inhabitants of this district of country were fast removing into the more unsettled parts of this State, or more generally into some of the new States. But the seasonable introduction and use of plaster of Paris renewed our worn-out lands, and brought them back to more than their original fertility. The depopulation of our State was prevented. Emigrations from other States were made into it; and New York, which in the year 1790 was only the fourth in population, and in 1800, only the third, at the last census in 1810, was the largest in population of any in the Union. But it not only made our inhabitants numerous, it made them industrious, prosperous and rich. The *gypsum* was the true philosopher's stone, which had been so long sought for. It turned everything it touched into gold.

To Chancellor Livingston this State is further indebted for the introduction of the Merino breed of sheep, and for the general emulation excited among our farmers, to rear and improve these valuable animals. The introduction of these was a consequence of the Chancellor's mission to France, and must be of the greatest and most decisive advantage to the United States. Already its effects upon our manufactures have been seen. The most affluent among us now feel proud to wear and to exhibit the fruit of our

infant manufactures. The American farmer feels a conscious greatness and independence, when he can appear clad in the vestments wrought by the hands of his sisters, or wife, or daughters. But above all, the real patriot sees and rejoices that our future dependence on foreign manufactures can be no longer asserted; and that our national wants can be supplied from our own internal resources, whenever the true policy of the government may require the measure. These are the consequences of the introduction of the Merino sheep. For ever honoured by his country be the man, who obtained the *golden fleece*, and returned with it to our shores; who has declared a second independence for our country.—*Eulogium by T. Clowes.*

From the American Farmer.

Sowing Wheat in July.

Wheatland, 8th March, 1848.

Mr. Editor,—In reply to the enquiry of "A Patuxent Farmer," in the March number of the Farmer, I will state, that I have made enquiries of several of the friends of early sowing, and have been informed by a neighbour of Mr. Hossenger, of Newark, Delaware—*who was the first to sow wheat in July* in this country—that his practice has been for five or six years, to sow wheat amongst his corn in July, and cultivate it in, from which practice he has obtained as high as 25 bushels per acre. I also understand, that during that time he has not failed to make a good crop but once. Mr. Hossenger continues that practice—many others in that neighbourhood have adopted the same plan; others have sown cornstalk fallow, and even clover-lay, with a like good result. Mr. Hossenger and most others, do not approve of pasturing down their wheat, either in fall or spring. But *Mr. Wm. Bowman*, one of the best and most successful farmers of St. George's Hundred, is in the habit of pasturing his July sown wheat with sheep. Possibly pasturing with sheep would be no disadvantage if fly was in the wheat. I should prefer to risk the fly, and not pasture. The July wheat sowers are generally our best farmers, and our best farmers generally at this day of agricultural improvement, put in all their fallow wheat with the *drill*. I have not sown any yet in standing corn, but I think I will put in in that way next July, and either cultivate or have a machine made with five drills, nine inches apart, to run between the rows of corn. I have been in the habit of planting with the drill in rows four feet six inches apart, and one stalk in the hill, one foot apart in the rows. Although I have seen others sowing wheat in July with great success, I have never yet sown any till near the last of August, and too often, late in September. I am so well satisfied with the practice of Mr. Hossenger, that I shall try to get in all my wheat this year, at least a month earlier than I have ever done before. I think Mr. Hossenger sowed once as early as 23rd of June.

It is gratifying to us on the eastern side of the Bay, to hear of, and occasionally see, the improvement going on on the western shore—for I too, had the pleasure of seeing those manure heaps on Col. Capron's field at or near *Laurel Station*, a few weeks since, and those drains and that white fence too, and I was equally well pleased to see about as good a dressing going on near home, on the farm of *Mr. Henry Kibler*, of Bohemia Manor, Cecil county, Md.,—but Mr. Kibler, like Col. Capron, is one of the very best farmers on this side of the Bay, as you may judge from the fact of his having taken twelve hundred and twenty bushels—or 24 bushels to the acre—of wheat the last year, from a field from which three hundred and twenty only was taken when last in wheat, and considered a good crop at that.

Mr. Kibler started, as most other good farmers start, by putting on *lime, which made clover*—not neglecting his farm-yard manure heap—which, together, has and always will, make the wheat and corn grow,—with this difference, many improvers had the *means*, as well as the *will*, to begin with,—will, by the by, is more than half the battle,—but Mr. Kibler had but little else than an honest face and hard hands, by which to obtain credit, wherewith to purchase lime, marl, &c. Mr. Kibler procured his lime on a credit, and in four years after he first determined to lime his farm, which consists of over 300 acres, he had the whole covered at the rate of 40 bushels to the acre, and paid for, by a portion of the crops grown; a kind of rent, in which the limeburner was amply paid for his lime, and Mr. Kibler was as well repaid for his labour—and the above is the result. He is now top-dressing all his land with marl, not neglecting his barn-yard at the same time.

Other valuable improvements have come under my notice, one of which I will mention. *Mr. G. G. Whitaker*, purchased an old field for ten dollars per acre, near Principio furnace, about five years ago, upon which he put on about 50 bushels of quick lime per acre at first, and subsequently gave it a further top-dressing of ashes, upon clover, of 200 bushels per acre, with perhaps a portion of barn-yard manure, but no other bought manures. Last fall I was invited

several times by his neighbour to go and see upwards of 100 bushels of corn grown, some said 110 bushels, by estimation. I did not go to see it, but a few weeks since, Mr. Whitaker told me, that he took between 2300 and 2500 bushels from 25 acres.

J. Jones.

For the Farmers' Cabinet.

Take care of your Implements.

Mr. Editor,—Nothing affords me greater pleasure, than the annual agricultural meetings which take place around us, "topped off, as they are,"—as my friend Tomlings says—"with an appropriate address, by some veteran in the cause." Many of these I make it my duty to attend; and perhaps one of the best speeches ever delivered on such an occasion, was that by Dr. Darlington, at the meeting of the Philadelphia Agricultural Society, at the Rising-Sun, four years ago. It may be found at page 124, of the ninth vol. of the Cabinet; and to it, I often turn for re-perusal, my establishment bearing witness, that such "labour is not in vain." It is concise and plain, and coming home, as it does, to every man's business, the lessons that it teaches are easily remembered, and as easily practiced; the leading feature being *the proper use and necessary care of our tools and implements.* For a considerable time after its delivery, I could perceive its beneficial effects, in the general management of my neighbours' establishments; and I would add, in my own, in particular, to the present hour. I well remember, the first thing I did after it, was to repair my outer gate, which, for years had been swinging in the blast, but never shutting; and the next, to build a shed, both wind and water-tight, for the bestowal of my implements, sufficiently large to afford "a place for every thing." Here, every tool is kept fit for use, out of the way of the droppings of the poultry-roost, by which so many of our implements, and even our carts and market wagons are disfigured; and especially our ploughs and harrows, which are generally left thus exposed for many months together, unless they are snugly packed away under the fence of the field last ploughed, and sheltered by a growth of weeds five feet in height! Now I calculate that my savings in the wear and tear of tools, since the delivery of that speech, have not been less than $50 per annum; while I put down the time gained by having "everything in its place" and fit for use, worth as much more—a very pleasant mode of adding $100 a year to one's income, on the faith of the old adage, "A penny saved is a penny got."

Travelling, some time since, through New Jersey, I noticed a large roller, on the frame of which had been erected a high roof, as a protection against injury from sun and rain; and seeing, the other day, a large and very expensively constructed double implement of this description, lying on Arch street wharf, with the name "Dr. Noble, Delaware City," on it, I would take the liberty of recommending the Dr. to follow the example, adding a seat for the driver; the oxen being easily guided, by a line from the tip of the left horn of the near ox, to that of the right horn of his companion. With this care, and housing it when out of use, such an implement would last a young man his life time.

T. C. S.

P. S. Since writing the above, I have had occasion to visit a friend, when, on enquiry for a sight of his plough, he reflected a moment, and said, "Let me see, where did we use it last? Oh, I remember, it was in the upper field, last wheat sowing;" and there we found it, *safe*, but not *sound*, and in a condition not easy to be imagined.

On the Principles of Vitality and Longevity in Fruit Trees.

By Professor Turner, Illinois College.

I have read with much interest, the various discussions on fruit trees and their diseases, in the several numbers of the Horticulturist. I have delayed the correspondence which I sometime since promised, partly for want of time, and partly in order to avail myself of the advantage of a tour through northern Illinois and Iowa, to examine nurseries and converse with practical nurserymen and fruit growers, so as either to confirm my theory by facts, or reject it. The result is, that my views, derived 1st, from the necessary laws of vegetable physiology, and 2nd, from the results of some ten years experimenting on those principles in my own garden and grounds, have been entirely confirmed, by the experience of intelligent practical observers with whom I have conversed, that I am willing to suggest them for the serious consideration of the editor and readers of the Horticulturist. I may, indeed, still be in the wrong; but if so, how shall I become right unless through the light illuminated by the editor and able correspondents of the Horticulturist. Meantime your readers will allow me to write with the the positiveness of one fully convinced in his own mind, even though those convictions may rest on a frail foundation.

My great object will be to prove that the jacknife and handsaw of the nurseryman,

are by far the greatest enemies of all fruit trees in this part of the west, and the producers of more hereditary and annual diseases among our fruit trees than all other causes combined. Their mischief is, of course, effected, first, by their use in grafting, and second, by their use in pruning.

In order to set this matter in its true light, it will be necessary to advert to the true *principle of vitality* and *longevity* in all trees, and to the effects of *soil* and *sun* on hereditary *diseases* and *diseased growth.*

1. *Principles of vitality and longevity.*—After all that has been said on the subject, I cannot resist the impression, that the essential elements of the highest degree of both vital power and of longevity, are placed by nature in the seed, and the seed alone. It alone of all other parts of the tree, contains within itself, in the highest degree of perfection, all parts of the embryo tree, trunk, roots and top; and these, when produced from a healthy seed, have both a vital power and a capacity for longevity which can never be produced from any other source. By vitality and vital power, I mean tendency to a vigorous and healthy growth, and by power or capacity of longevity, I mean tendency to a protracted continuance of that healthful growth through the longest series of years of which the tree is, in its own nature, capable of living.

The facts which might be adduced in proof of this position, are quite too numerous and too well known to need specification.

The highest power of vitality in a tree itself, produced from the seed, is, usually, at least, the neck of the tree, as some physiologists have called it, or precisely that point where the seed lies when it begins to throw its top upward and its root downward. At this point the tree manifests its vital power by throwing up vigorous suckers or shoots whenever its life is endangered above ground, and often from unknown causes. So much does the vital power of this part of the tree exceed all other parts, that it is a fact well known to root grafters in the west, that one inch of root near this point is as effective for their purpose, as twice that length of root remote from this vital point. Hence, too, suckers torn from old trees near this point, manifest a constant tendency to prolong a lacerated and diseased vitality by throwing out roots and throwing up suckers all around it. It is, in fact, an effort of nature to heal a mortal wound, analogous to the fabled story of the serpent's heads of old.

The vital power of the seedling tree diminishes as you recede from this point, both in distance and in growth—both upwards and downwards, and probably its power of longevity too. That is, one inch of root, or a single bud, taken from an old tree, in which the original vital force of the seed is expanded into long roots and thousands of buds, have each less vital power and less capacity of longevity, than the same length of root and the same kind of bud taken from a young tree, the original vital force of whose seed has been expanded only in a few buds and a few roots; and the more intimate their connection with this vital point, the neck of the tree, the greater the vital power, and vice versa. This, in case of the root, is determined mainly by simple distance, and in case of the top, by distance combined with vigor of yearly growth. That any other part of a tree could be forced to exhibit the same laws and the same power of vitality and longevity as the seed does, I cannot believe.

An eminent writer has recently attempted to prove, that the bud is as perfect an organ of reproduction as the seed, and that it has in itself all the appropriate elements and organic forces and powers of the seed itself—indeed that it is nothing but a seed "prepared for one set of circumstances," while the real seed differs from it only by being prepared for different circumstances. Now what proof is there of all this? Why, simply, that a bud can, by art, be made to grow and form a tree. But has it ever been proved that it can, under any circumstances, be made to exhibit the same power of either vitality or longevity as a seed from the same tree? By analogous principles of art, a slip from a man's forehead may be turned down and made to grow into a nose: and yet foreheads are not noses prepared for a "peculiar set of circumstances," nor yet nature's seed for noses; and if all noses were thus produced by art, it is probable that diseased noses would soon become as common as diseased trees now are. Facts are abundant to prove, that the proper natural vital force and power of longevity of a given tree is not found in any bud or scion, or in any other part of the tree, whatever, but that special part prepared by nature for the express purpose of continuing the vitality and longevity of the species. And there are, also, enough facts to suggest, at least, that this original vital force in the seed diffuses itself with the growth of the tree in the manner above indicated, and to render this view worthy of the careful observation and attention of all naturalists and practical fruit growers. For if these principles be correct, it follows, of course, that every time a seedling tree is divided or mutilated, either in top or root, its natural life is also, all other things being

equal, proportionally divided, mutilated or shortened. On these principles, if the top of a tree be wholly cut off, a sprout from the root or neck can possess only a part of the natural vital force or longevity appropriate to that tree: and although obvious considerations will make the new shoot grow more vigorously for a time, it will finally die sooner than the originally unharmed tree would have done in its place. But if we take nothing but a scion or a piece of root, or a single bud from a tree, we have only a small part of the original vital force of the seed; and this State is, at this moment, full of facts from one end to the other, to show that the actual longevity is, in all such cases, greatly diminished. The principle here maintained is, that *every time the seedling tree is divided, whether in root or top, its natural longevity and appropriate vital force, derived from the seed, is proportionally divided, abstracted and shortened;* and we fully believe that some of the worst forms of hereditary, and also of annual diseases, flow from a succession of such mutilations through a series of generations, or are produced by an effort of nature to resist and repair this interference with her natural processes, as we shall hereafter show.

In view of these positions, two things should be remembered: first, that there are trees, vines and shrubs, the natural vital force of whose roots, necks or trunks produced from seed, is so great, that they for ages continue to throw up shoots, and thus continue their natural life to so great a length of time, that even if the same general law holds in reference to them, it can never probably be ascertained, or if ascertained, would be of no practical importance. When a shrub, or vine, or tree, has the power of continuing its natural life, or of unfolding the vital force of the original seed by shoots, layers, or otherwise, through hundreds and thousands of years, two things are true: one generation of men do not live long enough to ascertain whether the seedlings of such plants will outlive the cuttings or layers taken from them, though in all probability they would; and second, the shortened and mutilated life is long enough for all practical purposes at least, whatever may be true in theory. It is not only difficult but useless to study the laws of longevity of such plants, as for example are the grape, currant, and many of our forest trees and shrubs. But when the natural life of a valuable seed does not exceed fifty or a hundred years, it becomes of the highest importance to the cultivator to ascertain the laws and principles upon which that life is necessarily diminished and shortened, especially if such shortening is liable to be great, and also attended by incurable hereditary and chronic diseases throughout the entire life of many of the thus mutilated trees.

Suppose, for example, the natural life of the apple seedling one hundred years. Suppose that the most careful grafting or budding into an entire seedling stock still diminishes the natural life to seventy-five years on an average: this, considering the importance of the supposed change, is tolerable. But suppose that by a further mutilation and division of a seedling root into some twenty pieces, the natural vital powers of the original seed is divided into as many parts, giving an average longevity of only twenty years, or even far less than that; this, surely, is intolerable; and yet this intolerable condition of things is the real condition of one half the best apples, and almost all the best pairs in this State. A good judge could tell how an orchard fifteen years old, in this State, was promulgated and grafted, simply by riding past it. Trees made from buds alone, will die out in large quantities the first five years—those made of slips of root two or three inches long, will be generally gone in fifteen or twenty years, while those put upon larger pieces, or upon the tap-root of a seedling, or upon a sprout from the neck of a vigorous tree, will rarely live over twenty-five years.

Multitudes of apple trees in this vicinity, which have been mutilated and grafted on sprouts and pieces of roots, through several generations of trees, have come into the same state that most of our pears, so treated, have already attained, viz: a condition of either hereditary or chronic disease, which exposes them to perish suddenly, just as the pear does, even when ten or twelve inches through, by what is called the "sun-blight," "frozen sap-blight," &c., &c., and if the same processes of grafting should be continued as long upon the apple as they have been upon the pear, I cannot doubt that it will become as difficult to make our grafted apples live to twenty years of age, as it is now to make our pears live that length of time.

So far as facts have been made public, I should suppose that the practical results of this mutilation in grafting, were developing their true nature more rapidly here than in any other part of the Union, or at least far more strikingly: and this, too, would be naturally expected; for in a soil so excessively rich as this, all trees come to maturity and decay more rapidly than on a poor soil. This is true of almost all our forest trees. Moreover a rich soil operates to hasten the development of chronic and hereditary diseases in trees, by the same law that high living tends

to the same result in the human family. It seems to be a law of universal nature, that plethora and surfeit tend sometimes to produce, that is, to originate disease, while it always tends to hasten the development of all diseased tendencies, while a barely sufficient diet often postpones the fatal hour both in the animal and vegetable world. Starvation also, doubtless, produces the same results as plethora. Hence wrong management and diseased tendencies may be expected to show their final result soonest on the richest and on the poorest soils—that is where there is the greatest and the smallest amount of the appropriate food for a given plant.

In addition to the above considerations respecting the vitality of seeds and the effect of soil, &c., it ought not to be forgotten that nature has appointed a certain equilibrium between the root and the top, and also between the length of the trunk and the top, which cannot be disturbed with impunity. There are certain laws, also, connecting the shape of the top with that of the root, of the greatest importance to the nurseryman—all of which are more or less disturbed and thwarted by the existing absurd modes of grafting and pruning. In my next paper I shall attempt to apply the above principles to the well known blight in the pear and the cherry, in the west, and the present wretched condition of many of our apple orchards. —*Horticulturist.*

Cheese Dairies.

The following extracts are made from a Report to the New York State Agricultural Society, kindly forwarded by our friend B. P. Johnson, the Secretary.—Ed.

The manufacture of cheese both for the domestic and foreign markets, is increasing rapidly in this State, and is becoming a source of wealth to our farmers, and adds much to the income from our internal channels of communication. The importance then of securing the largest yield, and a superior article for market, is apparent. From all the means of information which has reached the committee, they are satisfied that an improvement is making in each of these particulars, though slowly.

First in importance in the management of a dairy, after the necessary buildings are prepared, which should be of such dimensions as to afford room for all the operations without inconvenience, is cleanliness in every thing connected with it. "Cleanliness may be said to be not only necessary in dairy husbandry, but to be the foundation of it, and the most indispensable part of good management. A farmer may be in possession of the most valuable breed of cows, and these may be fed on the richest pastures, but unless cleanliness prevail in the dairy, his butter or his cheese will never stand high in general estimation."

The increasing importance of the dairy interest demands from this Society all the encouragement they can give to this branch of agricultural industry. From our location, and the peculiar adaptation of most of our State to the raising of stock and for dairy purposes, it is becoming a question of deep interest to our farmers, in what manner their farms shall be cultivated. The great emporium of our own State, and the numerous towns in New England, studded with manufactories, are opening increasing markets for our beef, butter and cheese, and the experience of the last few years has abundantly proved, that the farms devoted to the dairy have yielded a larger return than any other, when they have been managed with care and economy. The competition from the western States in our grain markets, has tended to render the products of the grain farms somewhat less lucrative than formerly. Our soil and climate are well adapted to Indian corn, and there is no more valuable food for fattening animals, it is believed, than this, and its usefulness for soiling when sown broadcast or in drills, is unsurpassed. We would, therefore, call the attention of our farmers to the importance of directing their energies so as to secure the best returns from their investments. Our rail-roads, canals, and plank roads, are opening speedy and safe channels of communications to the seaboard; and when the rail-roads now in progress shall be completed, two unbroken channels of communication from Lakes Erie and Ontario to the ocean will be secured. The cattle and the products of the dairy will then find a ready, and it is hoped, eventually a cheap transit to the market at all seasons. How important, then, that in these departments, in which for a long time to come, there will a demand exist at home and abroad, for all our supply, vigorous efforts should be made to bring our land, especially in the eastern, central, and southern counties into a suitable condition for grazing.

The selection of cows best suited to the dairy must be attended to, if success is expected. Experience has proved that the milk of some cows has a much thicker consistence and richer quality than others, and he that would be successful in securing a large yield from his dairy, must give attention to this; and when he has succeeded in obtaining cows suited to his purpose, care should be taken to breed from these, so as to continue the same superiority in his stock.

In relation to the selection of cows for the dairy, the description given by Mr. Youatt, in his Treatise on Cattle, may be useful, and the same points substantially are given in various other treatises as regards cows suited to the dairy.

"The milch cow should have a long, thin head, with a brisk but placid eye, be thin and hollow in the neck, narrow in the breast and point of the shoulder, and altogether light in the fore quarter, but wide in the loins, with little dew lap, and neither too full fleshed along the chine, nor showing in any part an indication to put on much fat. The udder should especially be large, round and full, with the milk veins protruding, yet thin skinned, but not hanging loose or tending very far behind. The teats should also stand square, all pointing out at equal distances, and of the same size; and although neither very large nor thick towards the udder, yet long and tapering to a point. A cow with a large head, and high back bone, a small udder and teats, and drawn up in the belly, will, beyond all doubt, be found a bad milker.

"Besides these qualifications, a great point to be considered is the temper; for kindly cows will not only give far less trouble in their management than those of an unruly disposition, but are commonly observed to have a more copious flow of milk, as well as to part with it more readily."

Experiments should be made by those who are engaged in the dairy business, as to the value of their cows for dairy purposes. Let them be fed with the same food, measure its quantity, as well as that of the milk from each, and when used separately, it will be no difficult matter to determine which is the most profitable. This is all important to success in this business.

In regard to the management of cows, we select from British Husbandry, vol. 2nd, page 399, some suggestions that are worthy of consideration:

"Experience has very decidedly shown, that no food is comparable to that of good natural pasture for milch cows; for not only does it yield a greater quantity of milk, but the flavour of grass butter may always be distinguished by its superior richness and delicacy from that which has been made from milk produced from soiling in the house, and its quality may be injuriously effected even by the application of manure to the land. Common salt given in moderate quantities to cows, increases the quantity and improves the quality of the milk. Milch cows should at all times be maintained not only in good condition, but in what may be termed a "milky habit," and for this purpose during winter, roots or grain should be given, so as to prepare them well for the opening of the pastures."

"The *act of milking* is one that requires great caution; for if it be not carefully and properly done, the quantity will be considerably diminished, and the quality also will be inferior, as not only is the first of the milk the poorest, but it gradually becomes richer, until the last drainings of the udder, or what is commonly termed the 'strippings.' It should, therefore, be thoroughly drawn from the cow, both to secure this latter portion and to ensure the continuance of the usual supply; for if any be allowed to remain in the udder, she yields a less quantity at the next milking—a fact which has been accounted for by supposing that the portion left in the udder is absorbed into the system, and that nature generates no more than to supply the waste of what has been taken away. The greatest care therefore should be paid, to have them clean milked. They should also be treated with great gentleness, and soothed by mild usage, especially when young and ticklish, for they never let their milk down pleasantly to a person whom they dread or dislike. If the paps are sore or tender, they ought to be fomented with warm water before milking, and, indeed, if the operation of milking be nicely performed, they should each time be clean washed, but this, we are sorry to say, is too often neglected.

"The choice of those who perform the duties of the dairy should never be entrusted but to persons in whose unremitting care and gentleness the utmost confidence can be reposed. All its operations should be conducted with the most punctual regularity, and with such extreme cleanliness that no speck or taint shall be discoverable either about the interior of the house or the utensils. Throughout Ireland, Scotland, and the north of England, it is invariably left to women, and were men to be employed, they would consider themselves degraded; but in the southern counties, great hulking fellows may be seen seated at the udder, and handling the teats with their huge fists, as if they had the delicate fingers of a girl. Females are in every way competent to the work, to which they are better suited by their delicacy and tenderness than men; it is, indeed, a truly feminine employment, and to their hands it should be left.

"The nature of the land, the oldness of the pasture, the age of the stock, and the state of the season, have each a separate influence upon the quantity and quality of the milk; thus the milk given by cows in autumn and winter is decidedly richer than that produced in spring and summer, and

yields the greatest quantity of butter in those months, with the least cheese; and therefore, no general average can be made with such accuracy as to merit confidence. The same remark will apply with even greater force to the produce of butter and cheese; for, besides these circumstances, cows even of the same breed yield a different amount from equal quantities of milk. Generally speaking, a fair annual product of either from each cow in good condition, may be considered as about 160 to 180 lbs. of butter of superior quality, and 350 to 400 lbs. of whole milk cheese, with a small quantity of whey butter."

"On proper attention to the *construction of the dairy house*, materially depends the perfect manufacture of cheese and butter, and nothing should be spared in rendering it as complete in accommodation as the nature and size of the farm will admit. The apartments which are peculiarly appropriate to dairy husbandry are, one for milk, another for scalding, pressing and salting cheese, and a third for the implements, and a store room, in cheese dairies, which may be placed under the roof. The building should be apart, —though convenient to the farm-yard,—from any immediate contact with the odor of the farm-yard, or other impurity, as well as from any pond of stagnant water, as nothing more readily acquires an unpleasant taste or smell than milk or cream. The site should be such as to be as little as possible affected by extremes of heat or cold, as a uniform temperature is all-important. The floors should be raised a few inches above the level of the outer ground, with slanting gutters to carry off the water used in washing, which is frequently done, both for cleanliness and coolness. On this, it should be observed, that every particle of milk that happens to be spilled on the floor should be carefully washed off, or its sourness will impart an unpleasant odor, which will infect the entire house; and it is extremely material that the building should be kept as dry as possible, as damp is also highly prejudicial to the operations of the dairy.

"The utensils of the dairy are familiar to all engaged in the business. The form of these utensils is matter of secondary importance, in comparison with that of *extreme cleanliness*, which is the *chief requisite* in all the operations of the dairy; and those vessels which can be the most easily cleansed, are the best to be employed. The dairy maid should be a careful, cleanly person, and the floor of the dairy should be kept dry, for water thrown down in hot weather will assuredly rise again in steam, and affect the milk with its humidity. The vessels used for holding the milk, and all the dairy utensils, after being first washed thoroughly clean, should then be rinsed a first and second time with sweet milk: "a cruet, washed ever so clean with water, will cause vinegar to become dreggy, but if rinsed with a little of the same, will always appear limpid and clear."

"The main point is *the superintendence of the dairy;* for unless that can be confided to the mistress of the family, and she be in every respect competent to conduct it with judgment, regularity, and that persevering industry which is actuated by motives of self interest, it will be only rarely found to afford any material profit. The making of butter and of cheese are also essentially different; for although every dairywoman ought to be well acquainted with the former, yet, excepting in the United Kingdom and in Holland, no two districts in any other part of Europe manufacture cheese of a similar flavor. This extraordinary difference has been attributed to the nature of the pasture on which the cows are fed; and this, doubtless, must have some effect, for experiments have been made by experienced persons brought from places where they have regularly lived, and well acquainted with the mode of making the peculiar quality there known, and yet when moved to another spot, they have not succeeded."

Milk.—"The chief component parts of milk are those, which, when separated, are known as forming butter and cheese; the residue of which is called whey. These are distinguished by scientific persons as the *butyraceous*, or oily substance producing cream, of which butter is composed; the *caseous* matter of which cheese is formed, and *scrum* or whey:

Cream forming	4.5	parts,	} of 100.
Cheese,	3.5	do.	
Wey,	92.	do.	

This can only convey a general idea of the component parts, for they must necessarily vary according to the quality of the milk.

The analysis of skimmed cows' milk is stated by chemists to be:

Water,	918.75	parts,	} of 1000
Cheese with a trace of butter,	38.	do.	
Sugar of milk,	35.	do.	
Muriate of potash,	1.70	do.	
Phosphate of potash,	0.25	do.	
Lactic acid with acetate of potash	6.	do.	
Earthy phosphates,	0.30	do.	

"Instruments have been invented, called lactometers, for ascertaining the richness of

milk in nearly the same manner as that employed for trying the strength of spirits. The difference in the quality of milk between particular cows may thus be determined, but it does not show whether the caseous or butyraceous matter predominates."

"The making of butter appears to have been known from the earliest history of the island, for when invaded by Julius Cæsar it was a common food of the Islanders; but the art of making cheese they learned from their conquerors. It seems extraordinary, that a people in possession of large herds of kine, could be ignorant of the art of making some sort of cheese from the sour curd with which they must have been acquainted; it is indeed described in many ancient authors; yet no mention is there made of the rennet with which it is now formed, nor is it known when the use of that article was first discovered."

"The mode of making cheese, though in the main points apparently the same, yet is subject to more variety of minor details in the practice, than that of anything formed of one material; and thus many different qualities are brought to market, each bearing some distinct character of its own. That many of those kinds, which are by connoiseurs thought indifferent, might, by other management be more nearly assimilated to the superior sorts, there can be little doubt; these peculiarities have, in many districts, attached a certain degree of value to their flavor, while in others it would seem to be imparted by the natural grasses on the soil. This applies more especially to Cheshire than to any other county; for although imitations of different districts have been, in some cases, successfully made in others, yet in no trial has cheese of true Cheshire flavor been produced when made from cows fed on other soils. Whether justly or not, it has been attributed to the abundance of saline particles in the earth, as evinced by the numerous salt springs which abound throughout a large portion of that county, and is so old a remark, that Fuller, in his 'Worthies,' when speaking of the county, says: 'It doth afforde the best cheese for quantitie and qualitie, and yet the cows are not, as in other countries, housed in the winter. Some essaied in vain to make the like in other places, thoughe from thence they fetched their kine, and dairie maids; it seems they should have fetched their ground too, wherein is surelie some occult excellence in this kind, or else so good cheese will not be made.' There must indeed be some truth in the observation, for it is well known that where brine springs most abound, the cheese is ever esteemed to be of superior quality. Whatever may be the foundation of the fact, the quality is, however, always better when the cows are pastured during the summer months.

"Although cheese may be made from the curd, which has been formed by the coagulation of the milk when it turns sour, yet when thus obtained it is hard and ill flavoured; many have therefore been found to curdle it with 'rennet,' which is made from the gastric juice of animals, but more especially from that found in the maws or stomachs of sucking calves, that have been fed entirely on milk."

Niagara Falls Suspension Bridge.

It is probably known to most of our readers who take an interest in such matters, that the Canada people have under contract and now in the course of construction, a railway, which is intended for high speed and heavy freight, from Windsor on the East shore of Detroit river, about a mile below the Falls. The distance is 228 miles.

From the eastern shore of Niagara, opposite the terminus of the Canada railway, a railway through Lockport along the Erie Canal to Rochester, is in the course of construction. Both of these roads, it is said, will soon be finished. They are, however, separated by the mighty Niagara, which runs between them in a gorge more than two hundred feet deep, with nearly perpendicular banks, and its waters are entirely impassable, owing to rapids tumbling over a rocky bottom on a great descent through which no water-craft ever attempted to cross.

To remedy this difficulty, some enterprising gentlemen of Western New York and Canada, have set themselves about spanning the river from rail-road to rail-road with a bridge, to be suspended on wire cables, of sufficient strength to cross rail-road trains, as well as carriages and horses, and the work is already under way, under the superintendence of Charles Ellet, Jr., engineer. To effect this, they are erecting two towers on each side of the river, built of substantial masonry, about sixty feet high above the rocky banks. Over the tops of these towers sixteen wire cables, four inches in diameter each, are to be stretched and anchored into the rock and fastened in the rear of the towers. These cables will weigh twenty-seven tons each, and will possess a strength equal to the support of six thousand five hundred tons weight.

From these cables thus extending across the river, the floor of the bridge is to be suspended on a level with the brow of the banks; and cars, carriages and passengers will enter upon the floor of the bridge between the tow-

ers. There will be two footways on the bridge, of four feet width each; two carriageways of seven and a half feet each, and a rail-road track.

The floor of the bridge will be two hundred and thirty feet above the water, and in full view of the Falls above and the whirlpool below, and the bed of the river between; thus adding artificial sublimity to nature's grandeur, and making each contribute to the other. The expense of this bridge will be about two hundred thousand dollars, and the grandeur of the work, and the attractions it will present at this great resort of the curious and the fashionable, would seem to form sufficient inducement for the outlay.

But such was not the inducement. The gentlemen who have undertaken it—like most of our enterprising countrymen—are practical and utilitarian. Lakes Erie and Ontario are about thirty-six miles apart—joined by the noble Niagara, passable any time at only a few points, and sometimes passable nowhere between the two lakes on account of floating ice. On both sides of the river is a thick population of Anglo-Saxons, carrying on constant intercourse. To facilitate this, and annex the two countries, and join their railways, they have set themselves to erecting this stupendous and seemingly impracticable structure. Western New York desires to avail herself of the transit of the Canada trade through the State and take its advantages. Canada is desirous of giving the Western States a passage through her dominions and to avail herself of whatever advantages may be gained by it.

Michigan, Illinois and Wisconsin, desire a winter trade, and are restless at being locked up so many months in the year by ice from the Atlantic; and they desire also to have a shorter, quicker, and safer passage to the East than round through Lake Erie. And the farmers in Canada and the interior of the upper States are anxious to send down their produce, and would not like to be stopped by this impassable gorge in the river. Our readers will therefore see that the public interest of vast multitudes is very deeply concerned in this enterprise, and though presenting great inducements to the curious and fanciful, it is, nevertheless, a work of vast utility, in which the benefit of millions is concerned.

The prime mover of this magnificent display of civil engineering and combination of mechanical powers, is our worthy fellow-citizen Lot Clark, Esq., heretofore distinguished in the public annals of his country; but certain now to be more widely and longer known by this momentous enterprise.

This suspension bridge seems worthy to stand in view of that stupendous display of the grandeur of nature, the Falls of Niagara; the sight of which so well rewards the pilgrims who come annually from all quarters of the world to contemplate and admire it.

No reader will need to be reminded of the inseparable connection which every where exists between the *Agriculture* of a country, and its *roads and bridges*, which serve—according as they are more or less perfect—to facilitate and cheapen transportation and exchanges between rural and manufacturing industry.—*Skinner's Farmers' Library.*

From the American Agriculturist.

Cultivation of Potatoes.

The cultivation of potatoes has become so precarious for the last four or five years, that it may be of service to publish an account of experiments, even if they have proved unsuccessful. I will therefore state my experience, such as it is, with a hope that it will be of more or less benefit to those engaged in the same calling as myself.

I have planted on a variety of soils, including a heavy clayey loam, gravel, black vegetable earth, loam, rich in animal and vegetable matter, and on a light, sandy loam. In the latter, I have always succeeded in raising sound potatoes, and I consider such a soil the most certain of producing a sound healthy crop.

In 1845, I planted my potatoes in April, May, June and July. Those planted in May, I found succeeded best; and the vines of those planted late, decayed early in September, soon after the young tubers began to form.

On the 15th of May, 1846, I planted an acre of potatoes, on a moist loam, suitable for growing Indian corn. One part of the field I manured with newly slacked lime; one with wood ashes; one with charcoal; one with bone-dust; one with poudrette; and another part with plaster, lime, ashes, and salt, mixed. The result was, that the largest yield and the least rot, occurred where lime only was applied, at the time of planting, in the hill.

Observing that the two rows of potatoes next to the corn, which occupied a part of the last named field, were entirely free from disease, and produced well, last season, (1847) I planted a lot, alternately, with two rows of corn, and two rows of potatoes; also, a small patch exclusively with potatoes, in the same field, manuring the whole with lime in the

hill. Those produced between the corn were all sound, and continue so to the present time, and were abundant in their yield; whereas, the others, planted by themselves, were more or less affected with disease. A portion of the ground was subsoiled to the depth of 16 inches. On this part, the produce was one-third greater.

From my experience, as above, I would recommend potatoes to be planted among Indian corn, before the 15th of May, in a light, sandy loam, or some other dry soil, subsoiled sixteen inches deep, with a gill of newly slacked lime, applied to each hill.

D.

Orange co., N. Y., March 27th, 1848.

For the Farmers' Cabinet.

Osage Orange.

Mr. Editor,—By inserting answers to the following queries you will oblige some of your subscribers.

1st. Is the Osage orange preferable to the common thorn for hedges? And if so, why?

2nd. How many years must elapse from the time of planting the seed, before it will make a sufficient fence?

3rd. Is it liable to be attacked by insects?

4th. Does it impoverish the soil any more than the thorn?

5th. Does its roots extend so as to offer an impediment to the plough?

6th. Do suckers arise from the roots, or does the seed germinate and grow where it falls?

7th. What is the process employed in raising it from the seed?

8th. Where can the seed or plants be procured, and at what price? And lastly,—where is there a *complete* hedge of the kind to be seen? W. D. S.

To the above queries we have been kindly furnished with the following replies, from a friend who is familiar with the subject.—Ed.

1st. The Osage orange is held to be preferable to the common Hawthorn for hedge, on account of its being better adapted to our climate, and because the spines or thorns are more formidable.

2nd. Under proper management a pretty good hedge of the Osage orange might be produced from seed or cuttings, in eight years.

3rd. It has not been known to be obnoxious to insects.

4th. From its proneness to running, it might be inferred that it was a considerable consumer of soil, but have heard no complaints against it on this score.

5th. The roots extend considerably from the line of the hedge through the adjacent ground, and of course, will, to a certain degree, impede the plough or spade when coming in contact with them.

6th. Suckers will spring up of course from the portions of the roots cut asunder by the plough or spade, if left in the ground covered to a depth favourable to their sprouting. A well trimmed hedge could hardly be expected to produce seed.

7th. The process of raising from the seed is one, we suppose, similar to that generally practiced,—soaking the seed a short time before planting, covering up one to two inches in fine mould, in a frame, or in open ground, having a south or south-eastern exposure.

8th. Most of the nurserymen of Philadelphia can supply quicks or sets—the price varies as to size, and can, it is said, be had at from $10 to $15 a thousand. Mr. Landreth may have a supply of the seed; of this, or the price it is held at, we can give no certain information.

James Gowen, of Mount Airy, is said to have several hedges of the Osage orange upon his farm, and doubtless would take pleasure in affording an opportunity to those who take an interest in such matters, to examine the hedges and judge of their utility.

J.

Remedy against Moths.

It is an old custom with some housewives to throw into their drawers every year a number of fir cones, under the idea that their strong reisonous smell might keep away the moth. Now, as the odor of these cones is due to turpentine, it occurred to Reaumur to try the effect of this volatile liquid. He rubbed one side of a piece of cloth with turpentine, and put some moths on the other; the next morning they were all dead, and strange to say, they had all voluntarily abandoned their sheaths. On smearing some paper slightly with the oil, and putting this into a bottle with some of the grubs, the weakest were immediately killed; the most vigorous struggled violently for two or three hours, quitted their sheaths and died in convulsions. It was soon abundantly evident that the vapor of oil of turpentine acts as a terrible poison to the grubs. Perhaps it may be said that even this remedy is worse than the disease, but, as Reaumur justly observes, we keep away from a newly painted room, or leave off for a few days a coat from which stains have been removed by turpentine, why therefore, can we not once a year, keep away a day or two from rooms that have been fumigated with turpentine?

It is, however, surprising how small a quantity of turpentine is required; a small piece of paper or linen just moistened therewith and put into the wardrobe or drawer a single day, two or three times a year, is a sufficient preservation against moths. A small quantity of turpentine, dissolved in a little spirits of wine,—the vapor of which is also fatal to the moth—will entirely remove the offensive odor, and yet be a sufficient preservative. The fumes of burning paper, wool, linen, feathers, and of leather, are also effectual, for the insects perish in a very thick smoke, but the most effectual smoke is that of tobacco. A coat smelling but slightly of tobacco, is sufficient to preserve a whole drawer.

The vapor of turpentine and the smoke of tobacco are also effectual in driving away spiders, ants, ear wigs, bugs, and fleas. The latter tormentors are so abundant on the continent, as frequently to deprive the weary traveller of his night's rest. If he would provide himself with a phial containing turpentine and spirits of wine in equal parts, and would sprinkle a few drops over the sheets and coverlid before retiring to rest, he would probably have reason to be grateful for the hint. Foreigners are in the habit of smoking in their bedrooms—a habit which excites surprise and disgust in England; it will now be seen, however, that there is reason for the practice.—*Sharpe's London Magazine.*

From the American Agriculturist.

Inducements for Immigrants on James River.

Notwithstanding the number of immigrants from the north, who have located themselves in various parts of Virginia, and the many who have recently visited the tide-water region of James river, few or none of them have, as yet, become purchasers or settlers; yet a more beautiful and a more healthful country I have never seen. Nature has here been prodigal of her favours, in affording a good natural soil, an abundance of marl, and excellent water. That noble river offers ample facilities to markets, for the sale of produce of every description, and to the immigrant it presents many inducements. Lands can here be bought *cheap*, and of the best quality. It is true, much of the land has been worn out, or exhausted, by improvident and injudicious cropping—everything taken off, and nothing returned; but there are many noble exceptions to this unfavourable state of things. Take, for instance, the Brandon, Coggins' Point, Shirley, Westover, Weyanoke, and other estates. These farms, I believe, have been, at a comparatively recent date, as unproductive as much of the impoverished lands in their several neighbourhoods; and I hazard nothing in stating, that almost every acre of land on the margin of the river could easily and cheaply be made to yield an equal or a larger return of crops than these farms are now doing.

On the estate which I now occupy, seven or eight years ago, six bushels of wheat, and from ten to twelve bushels of corn, would have been considered a high average crop per acre; but last year 540 acres yielded an average crop of 23½ bushels per acre, of wheat, and 520 acres of corn produced an average of not less than 38 bushels per acre. These returns present a handsome and encouraging increase, which has been brought about with comparatively little outlay, under a five-course rotation of crops; that is, corn, wheat, clover, wheat and clover, with the use of lime, gypsum, and the careful accumulation and application of manures made on the estate; and under an improved system of farming, there is no doubt but these returns might be doubled.

Your correspondent, "A New Yorker," I hope, will be able to extend his observations, and present your readers with his views of the capacities of this delightful region, and the inducements therein offered to immigrants. As above indicated, I consider this a healthy region of country, as a residence in it, of nearly fourteen years, enables me to say so confidently. I moved here with my family almost directly from Scotland, and together with my children, have enjoyed an almost uninterrupted continuance of good health up to this time.

I have heard several gentlemen from the Northern States, who have visited this part of Virginia, express fears that the *working farmer and mechanic*, together with their wives and daughters, would be considered as holding a lower position in society than they had been accustomed in their own States, and be so treated by the native Virginians; but from my personal observation and experience, these fears do the *ladies and gentlemen* of the Old Dominion injustice; for the industrious, intelligent, and respectable working farmer or mechanic, is sure to meet with a cordial and hearty welcome from every Virginian whose favourable opinion is worth having.

A. Nicol.

Sandy Point, Charles City, Va.
March 7th, 1848.

It is calculated that steam power effects in England, as much work as could be done by three hundred millions of men.

Scolding.—It has neither reason, religion, common sense, or experience to recommend it; while there are reasons many and mighty to justify its total and immediate abolition. It sours the temper of the children; so that one thorough scolding prepares the way for two or three more. It sours your temper, provided it is sweet, which is a question, if you are prone to scold; and thus the more you scold, the more you will have to scold, because you have become *crosser*, and your children likewise. Scolding alienates the hearts of your children. Depend upon it, they cannot love you as well after you have *be-rated* them as they did before. You may reproach them with firmness and decision, you may punish them with severity, adequate to the nature of their offences, and they will feel the justice of your conduct, and love you notwithstanding all. But they hate scolding. It stirs up the bad blood, while it discloses your weakness, and lowers you in their esteem. Especially at night, when they are about to retire, their hearts should be melted and moulded with voices of kindness, that they may go to their slumbers with thoughts of love stealing around their souls, and whispering peace.

The Grain Trade of the United States.

Growth—Consumption—and Supply.

The Commissioner of Patents, says Bicknell's Reporter, has prepared some valuable tables in relation to the grain trade of the United States. He has divided the subject under three heads—first, the production in 1847—second, the consumption and the surplus—and third, the disposition of that surplus. According to his estimate, the whole crop was as follows:

Breadstuffs:—		
Indian corn,	bu.	539,350,000
Wheat,	"	114,245,500
Rye,	"	29,222,700
Buckwheat,	"	11,673,200
		694,491,400
Grain not used for Bread:—		
Oats,	"	167,867,000
Barley,	"	5,649,000
		173,516,000
Total grain,		868,007,400
Other articles of Food:—		
Potatoes,	bu.	100,950,000
Beans and peas,	"	50,000,000
Rice,	pounds	103,640,390
Estimated population of the U. States,		20,746,400

The usual computation of statistics is, that five bushels of wheat are consumed by each individual; but inasmuch as in this country, animal food is more largely used than in any other, while Indian corn is substituted for wheat by a large class, and especially the slave population, it is assumed that an estimate of three bushels of wheat each for the entire population, or three and a half each, excluding slaves, would be about correct. The estimate for Indian corn is five bushels each, rye half a bushel, buckwheat a quarter of a bushel. This gives an aggregate of eight and three-quarters of grain for each inhabitant. An allowance is also made for animals—say five bushels each of corn for horses and swine, one bushel per head for neat cattle, and one quarter of a bushel for sheep. Poultry, it is supposed, consumes about 5,000,000 bushels of corn during the year.

The allowance for seed is 6,000,000 bushels for corn; for wheat, one bushel in ten; rye, one in eight; buckwheat, one in sixteen; and oats, one in twenty.

For distilling, the estimate is 25,000,000 bushels of corn, and 10,000,000 rye.

These premises lead to the following conclusions relative to the surplus:—

				Surplus.
Wheat.				
Production, 1847.		bu. 114,245,500		
Seed,	11,424,550			
Consumption,	62,239,200		73,663,750	40,581,750
Corn.				
Production,		bu. 539,350,000		
Seed,	6,000,000			
Consumption,	103,732,000			
Do. by animals,	230,963,096			
Distilling, &c.	25,000,000		365,695,096	173,654,904
Rye.				
Production,		bu. 29,222,700		
Seed,	3,652,587			
Consumption,	10,374,200			
Distilling,	10,000,000		24,025,787	5,196,913
Buckwheat.				
Production,		bu. 11,674,278		
Seed,	723,343			
Consumption,	6,000,000		6,723,343	4,950,935
Total,				bu. 224,384,502

With regard to the disposition of the surplus, the Commissioner says that the principal corn-purchasing countries of the world are Great Britain, France, Holland, the West India islands, British American colonies, Brazil and South America generally. They annually require about 33,000.000 bushels of wheat, exclusive of other grain, as follows:

	Bushels.
Great Britain,	20,000,000
France,	5,000,000
West Indies generally,	2,500,000
British American Colonies,	2,500,000
North America generally,	350,000
South America generally,	1,900,000
Holland,	1,000,000
Total,	33,250,000

This is the estimate for the demand under ordinary circumstances. Of course a plentiful harvest will diminish it, while on the other hand a short harvest, or destruction of some crop like the potatoe will greatly increase it. In 1847 it was greatly increased by the latter cause.

If the above estimate, and that which pre-

cedes it, are correct, the surplus wheat crop of the United States is more than sufficient to supply the ordinary deficiencies of all that portion of the world which is likely, under any circumstances, to require it.

The principal grain-exporting countries in Europe appear to be Russia, Prussia, Denmark and Sicily; in Asia, Syria; in Africa, Egypt. Two estimates of the exports of these countries are given in the report. The first was prepared for the London Mark Lane Express, in April of last year, and includes—as we understand it—all descriptions of grain.

Countries.	*Bushels.*
Russia on the Black Sea,	16,000,000
" " Danube,	12,000,000
" " Northern Ports,	4,000,000
Egypt and Syria,	4,000,000
Prussian Pomerania and Danish ports on the Baltic,	1,600,000
	37,600,000

Mr. Burk infers that the whole quantity of wheat for exportation, by the grain exporting countries of the world, excluding the United States, is not far from 20,000,000 bushels, and that the great rival of the United States is Russia.

She produces the most and sells it the cheapest, certainly at the port of Odessa on the Black Sea. She has, however, but few ports and her transportations from the interior are not so great as those possessed by the United States. It is doubtful, too, whether Russia can produce grain cheaper than the Western States of the American Union. From inquiries submitted during the last summer, it appears that the cost of growing wheat in the United States is as follows:

In New Hampshire,	$1 10 per bushel.
New York, Western,	64 "
Pennsylvania,	60 "
Ohio, Northern,	50 "
Michigan,	28 to 67½ "
Indiana,	25 to 35 "

These sums include every expense—interest on the value of the land being one idem—which attends the cultivation of wheat, from the preparation of the land to thrashing and storing; of course the cost varies in different years in proportion as the harvest is abundant or scarce. For example, the cost of raising a bushel of wheat in Michigan is given from four years' actual observation, and was as follows:—first year a bushel cost the grower, 27½ cents.; second year, 36 4-5 cents.; third year, 28 cents.; fourth year, 30 cents.

In view of the facts above stated, it is confidently believed, that the grain growers of the United States can successfully compete with those of any other nation in the great corn marts of the world.—*Bicknell's Reporter.*

Rearing and Feeding Calves.

Having had thirty-four years' experience in rearing calves, I hope you will excuse the liberty I take in sending you the following account of my practice—especially as I have found my method so much better than allowing the calves to suck their mothers. Whether the animals were intended for *keepers*, or *feeders*, I have always found that my method brings them soonest to perfection. It is shortly this:

1. For the first week the calf receives daily six quarts of new milk, as warm as it comes from the cow, in three portions—at morning, noon, and night. I carefully adhere to these three times of feeding for the first twelve weeks.

2. In the second week the milk is increased by half a pint at each feeding time; so that the calf receives, according to its strength, not less than six and three-quarters to seven quarts a day.

3. In the third week the calf no longer receives new milk, but the milk of the previous day skimmed; always taking care to warm the milk slightly, and at the same time increasing the quantity, so that the daily ration is now seven and a half quarts. I also commence at this time to introduce into the drink small portions of boiled linseed, or linseed meal and crushed peas.*

4. I proceed in the same manner in the fourth, fifth and sixth weeks, except that the milk is increased each week by half a pint at every feeding time, so that in the fourth week the calf receives eight and a quarter, in the fifth nine, and in the sixth nine and three-quarter quarts of milk daily; the animals also receiving more and more linseed meal, crushed peas, or rye meal in their drinks, which are always lukewarm.

5. In the next six weeks I gave them their food cold—with, however, more of these mixtures; the latter are always increased with the quantity of the milk, because too much liquid food is very apt to make the calves poor and pot-bellied. During this period I also take from them a portion of their milk, adding in its place such a portion of the linseed or other substances mixed with warm water as still to make the total quantity of each day's drink—increased, as I have said before, by half a pint at each meal—in the seventh week ten and a half quarts, and in the twelfth week fourteen and a quarter quarts per day.

6. Whoever pays proper attention to the feeding of his cattle will soon discover whe-

* Corn meal might be substituted for flax-seed, and for beans or other meal.

ther the proportion of food named be sufficiently rich or not, and can easily add or diminish the proper quantity.

7. There can be no animal so stupid about its food as the calf; it must therefore be taught from its earliest infancy. For this purpose, in teaching them to take their food when mixed with the linseed meal, &c., we generally begin by giving a small handful of oatmeal, and placing within their reach some good hay, or, if the season will afford it, some green food.

8. When the calves are twelve weeks old, the milk is entirely taken from them, and they receive in its place rye meal or crushed peas, made into pulp with water, and then thinned; the daily ration being increased until the end of the second quarter from 14½ to 20 quarts.

9. When the calves are half a year old, the drinking food is gradually lessened and thinned—the quantity being regulated by the natural thirst of the animals, as it gradually takes on to more substantial food.—*Farmers' Library.*

American Cheese Trade.

The cheese trade is rapidly augmenting in this country. The foreign exports of it have become a prominent article of supply for distant climes. Up to 1840 there was but a small quantity shipped, and that principally on foreign account. That year Messrs. Goodrich & Co., of New York, and the Messrs. Green, of Boston, made the experiment of large consignments to England. Of course, they met with the usual prejudices, the market before having been furnished with foreign cheese from Ireland and Holland. By perseverance the American article gradually came into favour, until it has now reached a heavy consumption. It fills part of the cargo of almost every vessel that leaves our seaports for Liverpool. The statistics of export, as will be seen by the following, betoken a still further extension, which is worthy the attention of the farmers of this State:

1840.....lbs.	723,713	1843.....lbs.	3,440,144
1841.....	1,748,781	1844.....	7,433,145
1842.....	2,456,677	1845.....	7,941,187
1846.....	8,675,390		

This foreign export trade has now reached over a million of dollars annually. It goes to fifty-two countries. Our heaviest customers in 1846 were—

England, lbs.	6,744,699	Hayti, lbs.	150,046
West Indies	807,040	British Guiana,	162,420
Cuba	227,276	Scotland,	88,041
Canadas	185,915	Venezuela,	40,812

Until within five years, cheese has usually been kept on sale in our eastern cities by grocers and produce dealers, with a general assortment of other products. A total revolution in this respect has taken place. In New York and Boston, extensive houses, exclusively for cheese, are doing a large business. Several commission houses are now solely engaged in it.

The farmers of our State seem to have neglected this important branch of the dairy. Every other saleable product is produced here in abundance; why not add this to our list of exports? We certainly possess the grazing land. Still we do not make 20 per cent. of the cheese consumed in the State. Daily it is shipped here from Buffalo, and goes into the interior of this State. Ohio also sends her hundreds of tons to our markets. Neither Western New York nor Ohio possesses more advantages for its manufacture than our own farmers. We are told that at the prices it has borne for the last five years, it is much more profitable than butter. In fact, for three months in the year, butter does not sell at any higher price. All dairy-women agree that two pounds of cheese are made easier than one pound of butter. Yet it is neglected.

In several towns near Buffalo, (Hamburgh and Collins,) it is the principal business of the farmers, and all who have embarked in it have greatly added to their wealth. Chautauque county farmers have increased their cows for cheese-making; Herkimer county, N. Y., produced 8,000,000 lbs. in 1845, according to the State census; St. Lawrence 9,000,000 lbs. In Allegany county, heretofore, lumber was the principal production; nearly every farmer now turns out his five to twenty casks of cheese in the fall. All the southern tier of counties in that State are largely embarking in it. The census of 1835 gives the quantity made in the State at 36,000,000 lbs. Ohio has doubled her exports of it within five years. Indiana cheese is now becoming known in the market.

As a sample of its increase, we give the following statistics of the amount that arrived at tide-water on the Hudson river, from the Canal Collector's books:

Year.	Pounds.	Exported.
1834	6,340,000	
1835	9,586,000	
1836	14,060,000	
1837	15,560,000	
1838	13,810,000	
1839	14,530,000	
1840	18,820,000	723,713
1841	14,170,000	1,748,781
1842	19,004,000	2,456,677
1843	24,334,000	3,440,144
1844	26,672,300	7,433,145
1845	29,371,000	7,941,187
1846	34,812,513	8,675,390

Here is a large quantity, but a ready market is found. The increase of foreign exports is large. Up to last fall the duty on it in England was $2 42 per 100 lbs. Sir Robert Peel's new tariff reduced it to $1 per 100 lbs., which will cheapen it to British consumers. The prices range in Liverpool, according to quality, from $10 to $15 per 112 lbs., and for three years past the London market has never been overstocked but three or four times, which has lasted but two to five weeks. It is getting introduced into all circles, and driving the Dutch article out of market. Mr. Colman, in his Agricultural Tour in Europe, says he found it gracing the tables of the lords and nobles, where, five years ago, it had never found its way. He dined with a Marquis, who treated him to American cheese, American apples, American cranberries, and American cider in bottles.

It is now exported to the East Indies in boxes; found in Calcutta; and goes, with other notions, to the Celestials of China. None but the real skim-milk grindstones, however, can stand a hot climate.—*Detroit Free Press.*

Highways.

BY WILLIAM BACON.

And what, say some of our brother farmers, have highways to do with agriculture? much more, why should they furnish topics for agricultural papers? We certainly know enough about that matter. When the time comes round, we work out our taxes, and thus make the roads very passable, and that is the end of the matter, unless they are filled with huge drifts, when "we break through," or, if the drifts are too large, in which case we go through the fields, until they settle, so that we can pass over them safely.

We admit all the above to be fact, so far as making, and repairing, and breaking out roads are concerned; but we do not subscribe to the creed that they have nothing to do with agriculture, or agricultural papers; but on the contrary, in our opinion, the two are very nearly associated, and the organ of the one forms the very channel of communication through which the claims of the other should be urged most strongly.

Good roads—what a luxury they afford to the traveller, the man of business, or the pleasure seeking public; what a convenience to the teamster, who moves along almost unconsciously over their smooth and well-finished surface! what a contrast to the up and down, corduroy affairs, which are, even in this age of improvement, too often to be met with—so rough, that if they do not positively jar the very spirit of the traveller out of him, they are certain to inspire him with any thing but agreeable sensations either in body or mind.

Our best public thoroughfares, as a general thing, are to be found where enterprising farmers are most abundant, and we have known very many instances where such men did not stop their labours when their "tax was worked out," but felt an obligatory responsibility to see to the little repairs necessary in order to keep the work they had accomplished, perfect through the year. What a few moments, thus employed, at proper times, will effect in securing public ways in right condition, and tend directly to a diminution of highway taxes, experience would soon show if the practice could become universal. Let a gully commence, and each succeeding shower will tend to make it worse, until from being unpleasant, it becomes uncomfortable, unsafe, impassable. In the end, days of labour and dollars of expense must be appropriated to put it where it was left the preceding year. Now, had the individual of nearest access to the place, taken a hoe and turned the water off, a labour which, in most instances, would not have occupied five minutes, when it first began to wear this gully, he would have been four-fold compensated for his service, every time he passed that way; the public would have had the pleasant and agreeable thoroughfare to which they were entitled, a heavy bill of expense in repairs, and perhaps a heavier one in damages, or a bill of indictment, justly rendered, might have been saved—all by five minutes labour before a shower.

But we introduced this article to speak more particularly of the common method of *repairing* highways, funds for which are usually raised by a tax to be paid in labour, at stipulated prices per day or hour. How large a proportion of this tax, in many of our towns, is worth six pence on the dollar, we leave it for the curious to decide in their own localities; we are certain, however, that within the sphere of our own observation there are some noble instances where men labour with their teams with the same fidelity that they would in getting in a crop on their farms. This is the correct principle. Every man who pays a highway tax contributes to a common fund, which should result to the benefit of all, and every man who cancels his tax by labour ought to consider this labour as resulting directly to his own benefit, not only as a matter of personal convenience and comfort, but in an economical point of view. Does an individual wish to sell his

property! The road that leads to his premises, is one item that goes to set a value upon it. If easy of access, its value will rise in estimation of the purchaser. Then, again, the general character of the road goes to tell the general character of the neighbourhood. If the highways are rough and unpleasant, the ways of the people about them are likely to be so too.

And this class of people are the ones upon whose labours we would make a discount of ninety-four per cent. from the assessments. They are behind time in coming to their labours, and watching time with sluggish indolence to see the sun gain the meridian, or sink behind the western hills. They make it a holiday, a day of rest, unless perchance they exhaust themselves in fault-finding, because those who work do not work faster, or do different. Thus they cheat themselves, for the sake of cheating others.

In working highways, care should always be taken to leave them as smooth as possible, with a gradual slope from the centre. The smoothing will enable beasts and vehicles to pass smoothly and easily along, without danger of stumbling to one, or an annihilating jolting to the other. The old practice of raising high bars across the road to stop the progress of water on hills was a pernicious one, and should be wholly abandoned. They were unsafe, and often highly dangerous annoyances, fraught with no particular good. When the road, even on the steep hillside, is well worked, a much better remedy for washing may be found by opening slight outlets every six or eight rods, by which the water will pass off quite as well as though huge embankments were raised to effect the object. Much less injury will arise to wagons where this is done, and the passenger will find himself passing over comparative smooth surface.

Another evil we will hint at, is the superabundant quantity of ploughing which frequently takes place at the time of repairing highways. Every one must have seen, not only in his own neighbourhood, but abroad, the ill appearance of ground ploughed and left in the furrow, or ditches badly cleared, to become the fallow for every noxious and unpleasant weed that the winds may see fit to sow. In repairing roads, no more land should be disturbed than is actually necessary to effect the object, and this is the most economical manner, so that, aside from such places and the travelled path, they may possess a smooth, green, velvety appearance, always grateful to the eye, and pleasant to pass along.

It is no visionary conjecture to contemplate the time when our highways will all be adorned, on either side, with beautiful rows of stately shade trees, to ornament and enliven the scenery. In that day, what a contrast will deep ditches, naked fallows, large patches of weeds, rough and uneven furrows, afford to their enlivening influence! Improvement in these things is necessary, and where improvement commences her work, and the result rarely and beautifully develops itself, its ultimate triumph may be well anticipated.—*American Journal of Agriculture and Science.*

Agricultural Premiums.

At a stated meeting of the Philadelphia Society for promoting Agriculture, held at their rooms on the 5th of April, 1848, A. S. Roberts, President, in the chair. The minutes of last meeting were read and adopted.

Roswell L. Cott, Esq., of Patterson, N. J., was elected an honorary member.

The committee appointed at last meeting to report a schedule of crops for which premiums should be offered this year, made report as follows, which was adopted.

For the best Wheat, not less than three acres, $10.

For the best Rye, not less than three acres, $8.

For the best Oats, not less than three acres, $6.

For the best Corn, not less than five acres, $10.

For the best Potatoes, not less than one acre, $10.

For the best Ruta Baga, not less than half an acre, $6.

For the best Sugar Beets, not less than half an acre, $6.

For the best Parsnips, not less than one-quarter of an acre, $6.

For the best Carrots, not less than one-quarter of an acre, $6.

For the second-best crop of each, or any of the above, a copy of Colman's Journal will be awarded.

A committee of five members were appointed to make inquiry, preparatory to holding the next annual exhibition the approaching autumn, and to report at next meeting.

Dr. Hare remarked that the health of farmers and others exposed to frequent changes of weather, would be greatly benefited by the use of additional clothing when required by such changes.

He also recommended the use of the rain guage, a necessary and useful article, which farmers might obtain at a small expense.

Mr. S. Williams recommended the use of zinc pans for dairies, as possessing the power

of preserving the milk in sweet or pure state, much longer than other pans used.

Dr. Hare remarked that great care would be necessary to keep them perfectly clean, or the milk and butter might be unwholesome. He thought it probable that a small block of zinc, placed in a tin pan, might produce the same effect on the milk by preventing its getting sour too soon.

Extract from the minutes.

A. CLEMENT, *Rec. Sec'ry.*

The Mustard Plant.

THE following paragraph is found in an Address delivered by Jacob Green in Albany, in 1814, before the Society for the promotion of Useful Arts. In confirmation of the sentiment there expressed more than thirty years ago, that this plant "might yield no trifling profit to the American cultivator," we would refer to the 99th page of our ninth volume, where the account of a crop raised by J. H. Parmlee, of Ohio, is given by C. J. Fell and Brother, of this city.—ED.

THE Sinapis or Mustard, is a plant which might yield no trifling profit to the American cultivator. Small clusters of it are seen growing in our fields and gardens; but whether it is a native of the country, or merely the fruit of chance, I am not able to determine. In some catalogues, however, it is marked as an exotic; but our climate is congenial to its habit, and almost every soil is adapted to its growth. A gentleman from Orange connty, in this State, has informed me, that he collected from half an acre of but tolerable land, fourteen bushels of the seed, which he believed equal in quality to that of the Sinapis Arvensis, commonly known by the name of Durham mustard. There are many species of this herb, but it would be well for the cultivator to confine his attention to the one just mentioned, the seed of which is more abundant and of a better quality than in the other kinds. The high price given for imported mustard, and the facility with which it can be raised, induce a belief that farmers generally might find their account in making it an article of culture and traffic.

The best Mode of Pruning the Peach.

IT seems to me that the promulgation of the improved mode of pruning, called the "*shortening-in*" mode, in the "Fruits and Fruit Trees of America," is one of the greatest benefits yet conferred on the thousands of cultivators of this best of all our fruits—the *peach*.

I believe you state that this mode has long been known and practiced in Europe, and that the peach tree is hence a great deal longer lived there than in the United States. Be this as it may, I am sure that it was previously little known or practiced on standard trees in this country; that the great benefits that would result from it were beforehand quite unknown to the majority of our peach growers.

It is, indeed, the only scientific mode of pruning this tree; for the common way of thinning out the branches, practiced with little care or skill on most of our fruit trees, is particularly unsuited to this. No better proof of this fact can be desired than one which I have every day before my own eyes. In my neighbour's grounds is a quantity of peach trees, six years old, which have never been pruned at all, except to thin out a few branches, which have borne two heavy crops, and already have that exhausted and lean appearance, indicative of feebleness and old age. The fruit which they bore last year was small, and comparatively flavourless. In my own garden I have a small plantation of peach trees, set at the same time as my neighbour's, but presenting a very different appearance indeed. They have been pruned for the past three years on the *shortening-in* mode. They have borne every year good crops of the largest and most delicious fruit to be found within my knowledge,—the crop regularly distributed over the branches. The trees are in most capital health; foliage deep green, and their shape, from the system of pruning adopted, round, bushy and symmetrical. Altogether, I am very proud of the effect of this mode of pruning upon my trees; and I assure you that many persons, who have come here to examine them, have gone away firmly resolved to "do likewise."

There cannot be a doubt that the peach tree exhausts itself, and is short lived in many soils, especially in those that are not deep and rich, by excessive over bearing. It is one of the great merits of the shortening-in mode, that by taking off a portion of the *ends* of every bearing shoot—that is to say, the young growth of the previous year—it effectually prevents this evil; since if you shorten-back the branch one-half, you necessarily take off one-half of the blossom buds, and diminish the probable crop of fruit one-half. This is treating the peach tree very nearly as it needs to be treated; for if one-half of the blossoms are thus taken off, it leaves the tree provided with just so many as it can carry regularly, every year, without exhausting itself; and the fruit that is left is much larger, and a great deal more delicious than if the tree goes unpruned, and bears a full crop. This I have twice satisfied myself of by direct experiment, on trees side by side, of the same variety; and

you could scarcely credit the improved quality of the pruned tree, without comparing them.

One of my acquaintances, who is an intelligent orchardist, and grows peaches for market on a large scale, now makes his trees branch out, or form their heads quite low, and shortens them in with a pair of large *hedge-shears*,—the blade two feet long,—fastened on long handles. In this way it is but a short job to prune a whole orchard.

I have used wood ashes as a manure for peach trees with the greatest benefit. It gives them a particularly healthy and sound look; that is, without becoming gross, or over-luxuriant, they make a moderate growth of good plump shoots, have very healthy foliage, bear high coloured and well ripened crops.

I use wood ashes, either leached or unleached. The latter is, if quite fresh, about three times as strong as the former; and, therefore, while half a peck of unleached is sufficient, usually, for a young tree just beginning to bear, I have found half a bushel not too much of the leached ashes. It ought to be spread over the surface, and dug in a few inches only. Probably the best time of applying it is in October; but I have also found it to answer admirably as late as June, —very soon, if the season is a rainy one, changing the common colour of the leaves to a deep emerald hue.

I have so high an opinion of the good effect of ashes, that—agreeing with you, that the yellows is only disease, caused by bad treatment and exhaustion,—I feel almost certain that the shortening-in mode of pruning, and the use of ashes, will drive this malady out of the country, if cultivators can be brought to estimate properly their joint value.

It is, no doubt, *best* to prune the peach tree early; but, as I have seen no bad effects whatever from shortening-in as late as the middle of May, I advise such of your readers as may not have performed that operation already, on their peach trees, to take knife in hand and sally forth immediately.—*Horticulturist.*

Facts about Digestion.

Wheat is most nutritious of all substances, except oil; containing ninety-five parts of nutriment to five of waste matter. Dry peas, nuts and barley are nearly as nutritious as wheat. Garden vegetables stand lowest on the list, inasmuch as they contain, when fresh, a large portion of water. The quantity of waste matter is more than eight-tenths of the whole. Veal is the most nutritious, then fowls, then beef, last, pork. The most nutritious fruits are plums, grapes, apricots, peaches, gooseberries, and melons. Of all the articles of food, boiled rice is digested in the shortest time—an hour. As it also contains eight-tenths of nutritious matter, is a valuable substance of diet. Tripe and pig's feet are digested almost as rapidly. Apples, if sweet and ripe, are next in order. Venison is digested almost as soon as apples. Roasted potatoes are digested in half the time required by the same vegetable boiled, which occupy three hours and a half—more than beef or mutton. Bread occupies three hours and a half—an hour more than is required by the same article raw. Turkey and goose are converted in two hours and a half—an hour and a half sooner than chicken. Roasted veal and pork, and salted beef, occupy five hours and a half—the longest of all articles of food.—*American Journal of Agriculture and Science.*

Grafting Currants.—The Gardeners' Chronicle recommends, for the pretty appearance presented, as well as improved flavour, to graft currants of different colours, as the red, black, and white, variously intermixed, on stocks trimmed up to a single stem, three or four feet high. The tops may be headed down to a dense compact head, or trained as espaliers in the horizontal or fan method, the two latter modes of training, by the free exposure to the sun and air, much improving the quality of the fruit. The importance of trimming the bushes up to a single stem to improve the fruit and facilitate clean culture, instead of suffering two hundred and fifty suckers to shoot up all around into a dense brush heap, is very obvious to those who have tried both.

Hens.—To make them lay perpetually, have their houses thoroughly cleansed; let no filth get in the nests; whitewash the places they frequent; put lime, sand, ashes and gravel, under roof, where they have access; give them fresh chopped meat, grain, and potatoes every day during cold weather, and until insects appear; never leave nest eggs for them; give them clean hay, plenty of water, and they will be profitable.

True Breeding.—Lord Chatham, who was almost as remarkable for his manners as for his eloquence and public spirit, has defined good breeding to be "Benevolence in trifles, or the preference of others to ourselves in the little daily occurrences of life."

THE FARMERS' CABINET,
AND
AMERICAN HERD-BOOK.

PHILADELPHIA, FIFTH MONTH, 1848.

THE Editor of the Farmer's Cabinet will relinquish its publication at the close of the current volume in the seventh month next. He will dispose of the concern upon terms that may be advantageous to any one who may incline to continue it.

REPORTS from all neighborhoods in this vicinity—as well as from many others far distant, inform us that the prospect for the wheat and grass crops, is remarkably promising. The showers and the sunshine have been opportune, and the appearance of the country is wearing its beautiful spring like livery.

COAL.

THE subscriber has made an arrangement for a constant supply of superior Lehigh and Schuylkill Coal—carefully prepared for family use, which he will furnish *at the usual cash prices*, on application at the office of the Farmers' Cabinet, where samples of the different kinds and sizes may be seen.

JOSIAH TATUM.

Philadelphia, Fourth month 15th, 1848.

COATES' SEED STORE,

No. 49 Market Street,

FRESH TIMOTHY SEED,

Of various qualities, from good common seed to the purest and finest that can be produced,

TOGETHER WITH A COMPLETE ASSORTMENT OF

GRASS & GARDEN SEEDS,

Of the finest Quality and best Varieties,—Bird Seeds, &c.

JOS. P. H. COATES,
Successor to George M. Coates.

May 15th, 1847.

SEED STORE,

No. 23 Market Street, Philadelphia.

The subscriber keeps constantly a supply of White and Red Clover, and other grass seeds; fresh Perennial Rye-grass, and Lucerne seed. Field seeds, consisting of choice Spring Wheat, Barley, Potatoe Oats, Northern and other seed-corn. Also, in season, Fruit and Shade Trees. Garden and Bird seeds generally. Guano in parcels to suit purchasers.

M. S. POWELL.

Philad., Feb., 1847. tf.

Agency for the Purchase & Sale of
IMPROVED BREEDS OF CATTLE & SHEEP.

THE subscriber takes this method of informing his friends and the public, that he will attend to the purchase and sale of the improved breeds of cattle, sheep, swine, poultry, &c., for a reasonable commission. All letters post paid, addressed to him at Philadelphia, will be attended to without delay.

AARON CLEMENT.

April 15th, 1847.

NEW
Horticultural and Agricultural Ware-house,

84 Chesnut Street below Third, South side.

The subscriber has for the better accommodation of his customers, opened the above ware-house, with a large stock of Garden and Field Seeds, crop of 1846. Implements and Books on Gardening and Farming; he calls the particular attention of farmers to his pure stock of Sweede Turnips, Field Carrots, Beets and Parsnips, Pruning Shears, Saws and Knives.

March 14th, 1847.—1y. R. BUIST.

GUANO.
Peruvian & African Guano, in bags & bbls.

ALSO, PREPARED GUANO.

This article has been in use during the last year, and from the effect that it has produced, can be safely recommended to farmers as a cheap and valuable fertilizer; the object in preparing this article is to give the farmer a manure at a very low price, that will enable all to use it. It is prepared upon strictly scientific principles, and is recommended to general use by the *Farmers' Club, and the New York State Agricultural Society.*

For Sale by ALLEN & NEEDLES,
23 South Wharves, near Chesnut Street, Phila.

Feb. 15th, 1848.—6m.

PREMIUM IMPLEMENTS.

PROUTY'S Improved Machine for Shelling and Screening Corn, and Separating it from the Cob.

For this Machine the Philad'a Agricultural Society awarded their first Premium for Corn Sheller, 1847.

Grant's Patent Premium Fan Mill,

For Chaffing and Screening Wheat, at one operation. Three Silver Medals, and nine First Premiums, have been awarded for the above Mill.

Prouty and Mears' Patent Centre-Draught, Self-Sharpening Ploughs. First Premium awarded for these Ploughs, by the Philadelphia Agricultural Society, 1844, 1845, 1846 and 1847.

Corn and Cob Breakers and Grinders,

Corn Stalk Cutters & Grinders—Sugar Mills—Spain's Improved Barrel Churn, the dashers of which may be taken out to clean. Also, a full assortment of Agricultural Impliments, Manufactured and for Sale by

D. O. PROUTY,

No. 194½ Market Street, below Sixth, Phildelphia.

Nov. 15, 1847.—tf.

☞ SHORT ADVERTISEMENTS,

The subject matter of which, may correspond with the agricultural character of this paper, will be inserted at the rate of one dollar for each insertion of ten lines or less; and so in proportion for each additional line. Payment in advance.

THE quantity of rain and snow which fell in the 4th month, 1848, was ..... 1.50 in.

Penn. Hospital, 5th mo. 1st.

We keep on hand at this office, and will supply our friends with Agricultural works generally. Among which are

THE FARMER'S ENCYCLOPEDIA, full-bound in leather;—Price	$3 50
YOUATT ON THE HORSE, with J. S. Skinner's very valuable Additions;	2 00
BRIDGEMAN'S GARDENER'S ASSISTANT;	2 00
THE AMERICAN POULTRY BOOK;	37½
THE FARMER'S LAND MEASURER;	37½
DANA'S MUCK MANUAL;	50
Complete sets of the FARMERS' CABINET, half-bound, 11 vols.	9 50
DOWNING'S Landscape Gardening,	3 50
Downing's Fruits and Fruit Trees of America,	1 50
SKINNER'S Every Man his own Farrier,	50
AMERICAN Poulterer's Companion,	1 25
BOUSSINGAULT'S RURAL ECONOMY,	1 50
FARMERS' & EMIGRANTS' HAND-BOOK,	1 00
MORRELL'S AMERICAN SHEPHERD,	1 00
STABLE ECONOMY,	1 00
BEVAN on the HONEY BEE,	31½
BUISTS' ROSE MANUAL,	75
THOMAS' FRUIT CULTURIST,	50
SKINNER'S CATTLE & SHEEP DOCTOR,	50
AMERICAN FARRIER,	50
THE FARMER'S MINE,	75
HOARE ON THE VINE,	62½
HANNAM'S Economy of Waste Manures,	25
LIEBIG'S AGRICULTURAL CHEMISTRY,	25
" ANIMAL CHEMISTRY,	25
" FAMILIAR LETTERS,	12½
JOHNSON'S DICTIONARY OF MODERN GARDENING,	2 25

Subscriptions received for Colman's Agricultural Tour—or single numbers sold.

☞ We are prepared to bind books to order.

AFRICAN GUANO.

First quality African Guano, from the island of Ichaboe, warranted genuine. Also a few tons Peruvian

For sale by J. B. A. & S. ALLEN,
No. 7 South Wharves, 2nd Oil Store below Market street.

Philadelphia, March 17th, 1847.

Poudrette.

A valuable manure—of the best quality, prepared in Philadelphia, for sale at the office of the Farmers' Cabinet, No. 50, North Fourth Street, or at the manufactory, near the Penitentiary on Coates' street. Present price, $1 75 per barrel, containing four bushels each, or 35 cents a bushel. Orders from a distance, enclosing the cash, with cost of porterage, will be promptly attended to, by carefully delivering the barrels on board of such conveyance as may be designated. The results on corn and wheat last year have been generally very satisfactory. Farmers to the south and in the interior, both of this State and of New Jersey, are invited to try it. We are now ready to supply any demand for corn, or as a top dressing for wheat.

JOSIAH TATUM

Philada. 4th mo. 15th, 1848.

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For eight dollars paid in advance, a *complete set* of the work will be furnished in numbers, including the 12th volume. The whole can thus readily be forwarded by mail. For twenty-five cents additional, per volume, the work may be obtained neatly *half-bound and lettered.* Copies returned to the office of publication, will also be bound upon the same terms.

By the decision of the Post Master General, the "Cabinet," is subject only to newspaper postage.

Joseph Rakestraw, Printer.